COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Framingham, Mass. and additional mailing offices ©1982 by CW Communications/Inc.

Vol XVI, No. 6 February 8, 1982 $1.25 a copy; $36/year

CW MIARL UNIT SF

NEWSPAPER

Product Spotlight

DP Training: Multimedia Aids

By Marguerite Zientara
CW Staff

Of the literally hundreds of companies that offer DP training courses today, three multimedia vendors stand out as exceptional based on market share: Advanced Systems, Inc. (ASI), Deltak, Inc. and the Edutronics Division of McGraw-Hill International Training Systems. While Deltak and ASI appear to be a relatively close No. 1 and No. 2, respectively, Edutronics reportedly is a distant third in terms of revenues and number of courses offered.

It was not always that way, however. IBM's introduction of OS in the mid-'60s had created a need for training because of its complexity, as opposed to IBM's previous, simpler DOS operating system.

Edutronics, the first of the three companies to enter the field, began in 1968, using Super-8 film as its medium, and enjoyed a position of leadership in the industry for the next four years.

ASI began in 1968 as well and the two were followed in 1970 by the entrance of Deltak into the industry. While Edutronics at first used film for its course medium, ASI and Deltak both started right in with videotape — a situation that threw the balance toward them as video equipment continually dropped in price.

(Continued on Page 12)

IBM Back in the Services Business; Net Accessible From Seven Cities

By Tom Henkel
CW Staff

RYE, N.Y. — IBM reentered the computing services business last week with the IBM Information Network, a leased-lines data communications facility that offers users access to IBM program products and the VM and MVS operating systems.

The company has been out of the time-sharing business since 1973, when it sold its Service Bureau Co. to Control Data Corp., settling an antitrust suit that CDC had brought against IBM (see story on Page 4).

The IBM Information Network is currently available to users in seven metropolitan areas — New York, Atlanta, Chicago, Dallas, San Francisco, Washington, D.C., and Tampa, Fla. The network can provide users with raw computer time to test, develop and maintain application programs, freeing in-house computer systems for regular production work. IBM is also offering the network, complete with its VM and MVS operating systems, to corporate end users with limited programming experience who wish to develop applications without the help of the data processing department.

On the network, users can develop programs and use a list of commercially available IBM program products. Specialized packages — computer-assisted design and manufacturing software, for example — are not currently offered on the network.

The network is interactive and can be accessed through virtually any terminal, including IBM's recently announced Personal Computer. It supports IBM's Systems Network Architecture as well as binary synchronous or start/stop data transmission formats, the vendor said.

The processors that make up the network are based in Tampa. Initially, 3705 communications controllers based in the seven metropolitan areas will provide the link to the Tampa data center.

While IBM declined to specify how many processors are being used at the Tampa site, a spokesman said that a number of 30 series processors are involved.

The network utilizes standard IBM hardware and software products. More than 100 program products based on MVS and VM/370 control programming are available to network users, according to a spokesman.

In addition, IBM announced a VM Productivity System (VMPS) and MVS Productivity System (MVSPS)

(Continued on Page 4)

Two Vendors Link DBMS, Color Graphics Facilities

• *For IBM Users*

By Lois Paul
CW Staff

NEW YORK — Cullinane Database Systems, Inc. announced last week that it has developed interfaces and procedures to allow applications running under its Integrated Database Management System (IDMS) to communicate with Computer Pictures Corp.'s analytical graphics systems.

The facility was designed to provide color graphics representations of data in the corporate data base for use by top management decision

(Continued on Page 6)

• *For DEC Users*

PHILADELPHIA — International Data Base Systems, Inc. has developed a color graphics facility that interfaces with its Seed data base management system and Harvest query language. Rainbow, as the facility has been dubbed, is currently available for users of Digital Equipment Corp.'s VAX-11 line of superminicomputers.

Rainbow reportedly enables non-DP professionals to display the output of a Harvest query in a graphics format that is selected by the software itself. It is an additional soft-

(Continued on Page 6)

A New Chapter in His Career

Virgil Pittman

By Jeffry Beeler
CW West Coast Bureau

COLUMBUS, Ohio — Virgil Pittman marked the beginning of a new chapter in his nearly 20-year information systems career on New Year's Day. That was the date he formally took charge as Nationwide Insurance Co.'s vice-president of systems and data processing.

Pittman, 40, joined the locally headquartered firm last Sept. 1 as the designated heir apparent to the organization's highest ranking information systems officer, who was scheduled to retire soon. Dec. 31 marked the executive's last day on the job, and one day later the reins of Nationwide's in-house systems department officially passed to Pittman.

Before coming to work for Nationwide, Pittman spent roughly six years at Equitable General Insurance Co. in Fort Worth, Texas, where he last served as senior vice-president of corporate information services. Under Pittman's direction, Equitable developed from scratch a companywide state-of-the-art insurance information system in only about nine months.

The success of the systems development project, which was completed within budget, turned Equitable's in-house computing department into an industry showcase, earned Pittman nationwide recognition and publicity and helped him become one of the few DP managers anywhere in the U.S. to win a spot on his company's board of directors.

In early 1981, however, Equita-

(Continued on Page 8)

FAA to Replace Its IBM 360s

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Immediate replacement of its IBM 360 computers with software-compatible mainframes will be the first step in a systemwide modernization plan for the national air traffic control system, the Federal Aviation Administration said recently.

The IBM 9020 models currently in operation at the FAA's 25 air route traffic control centers and at several support facilities will be replaced by more powerful machines scheduled to be on-line by 1985, according to the agency, which said an IBM 4341 is already slated for one installation.

The 9020 replacement is just the first of 19 separate but interdependent automation, communications and facility projects of the long-awaited FAA modernization plan. FAA Administrator J. Lynn Helms said of the plan that "the computer is going to be the least costly item."

Unveiled recently in a day-long series of public meetings, press conferences and technical briefings, the 20-

(Continued on Page 4)

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

TM reg. U.S. Pat. Off.

Editor John C. Whitmarsh
Managing Editor Rita Shoor
News Editor Cheryl M. Gelb
Senior Editors:
Features Catherine Marenghi
Software Lois Paul
Communications Phil Hirsch
Systems Timothy J. Scannell
Office Automation Bruce Hoard
Industry Marcia Blumenthal
Management Brad Schultz
Writer/Analysts: Marguerite Zientara
Tom Henkel
Staff Writer Jim Bartimo
Correspondents:
New York Bob Johnson
Washington, D.C. Jake Kirchner
Phil Hirsch
West Coast Robert Batt
Jeffry Beeler
Chief Copy Editor Donovan White
Copy Editors: Dave Bouffard
George Cohen
Kathie Gow
Patricia Keefe
Steve Milmore
Betsy Morse
Linda Rosenthal
Deborah Scaduto
Barbara T. VanScoyoc
Editoral Assistants: Susan M. Blakeney
June Fettig
Contributors:
Education J. Daniel Couger
Taylor Reports Alan Taylor
Human Connection Jack Stone
SPECIAL PUBLICATIONS
Computerworld Extra!
Editor Jack B. Rochester
Computerworld OA
Editor Ann Dooley
Copy Editor Nancy Fleming

Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES:

New York City: Suite 7G, 401 East 80th St., New York, N.Y. 10021. Telephone: (212) 570-2135.

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301. Phone: (415) 328-8064.

Washington, D.C.: 880 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Julian Marshall, Thomson Computerworld Ltd., 146-148 Clerkenwell Road, London EC1R5DJ. Phone: 01-837-1222. Telex: UK-269477.

W. Germany: Eckhard Utpadel, CW Publikationens, Friedrichstrasse 31, 8000 Munich 40. Phone: (089) 34-90-61. Telex: 5215350.

France: Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone: 720.85.66.

Asia: Hidetsuna Sasaki, Dempa/Computerworld Company, Dempa Building, 1-11-15, Higashi Gotanda 1-chome, Shinagawa-ku, Tokyo 141. Phone: (03) 455-6101. Telex: J2424461.

Australia: Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395133. Telex: SECCO AA25468.

Brazil: Eric Hippeau, Data News, Computerworld do Brazil, Servicos e Publicacoes Ltda., Rua Alcindo Guanabara, 25/10th Floor 20031 Rio de Janeiro, RJ Brazil. Phone: (021) 240-8225. Telex: 2130838(WORD BR).

Mexico: Kevin Kelleghan, Computerworld de Mexico, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (905) 514-4218, (905) 514-6309.

Spain: Neil Kelley, Computerworld/Espana, Barquillo, 38, Madrid-4.

Denmark: Helle Lind Christensen, Computerworld/Denmark, Gammel Strand 50, 1202 Copenhagen K. Phone: 01-1234-11.

Second-class postage paid at Framingham, Mass., and additional mailing offices PN127428. *Computerworld* (ISSN-0010-4841) is published weekly, except: semiweekly the third week in March, the first week in September and a single combined issue the last week in December and the first week in January by CW Communications/Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

PHOTOCOPY RIGHTS: permission to photocopy for internal or personal; use or the internal or personal use of specific clients is granted by CW Communications for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 21 Congress Street, Salem, MA 01970.

Permission to photocopy does not extend to contributed articles followed by this symbol. $

Special requests should be addressed to Nancy M. Shannon, CW Communications/Inc. Box 880, 375 Cochituate Rd., Framingham, MA 01701. **ISSN 0010-4841/81 $3.00 + $.50**

$1.25 a copy: U.S. — $36 a year; Canada, Central & So. America — $65 a year; Europe and Near East — $125 a year; other foreign — $175 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

Computerworld can be purchased on 35 mm microform through University Microfilm Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700. *Computerworld* is indexed: write to Circulation Dept. for subscription information.

ABC ☆ABP mcc MEDIA DATA CORP

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Dept., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Urges Close Union Contact

NRC Gives Thumbs Up on Ecom

By Tim Scannell
CW Staff

WASHINGTON, D.C. — The National Research Council (NRC) has released a report approving of the U.S. Postal Service's computer-based electronic mail system. In its report, the private organization that conducts studies at the request of the federal government also warned the Postal Service to keep in close contact with the various postal labor unions to avoid any personnel problems that might evolve from newly and hastily implemented technologies.

Launched early last month, the Postal Service's Electronic Computer-Originated Mail (Ecom) system uses computers and telecommunications to electronically transmit mail from one point in the country to another [CW, Jan 11].

Described as a "Generation II" system — which is a step below full electronic mail — Ecom differs from direct sender-to-receiver electronic mail in that messages are transmitted to and from 25 serving post offices located throughout the country, printed out and then delivered as regular first-class mail.

Government Suit

Ecom and the Postal Service are currently wrapped up in a suit filed last year by the federal government, claiming the system was never formally approved by the U.S. Postal Rate Commission. Briefs for both parties were filed on Jan. 11 and the case is presently being considered by the U.S. Court of Appeals.

Calling Ecom "basically sound," the NRC urged the Postal Service not to rely on any outside consulting or engineering firms for its operation. The Postal Service has to retain control to "respond quickly to changes in market demands and changes in the technology in order to make that system operate efficiently," the report said.

The NRC study — which was requested by the Postal Service before the system's start — also recommended that the Postal Service develop more in-house experience with regard to electronic mail and telecommunications, which are the essence of Ecom.

Labor Not Threatened

On the subject of unions and the impact Ecom might have on future and present employment, the report noted that officers of all the major postal unions — including the American Postal Workers Union, The National Association of Letter Carriers and the AFL/CIO — had met earlier with NRC and agreed that the system would pose no serious threat to postal workers.

While an electronic mail system would impact mail handlers and clerical workers, postal union leaders "have all declared that their primary concern is to make the Postal Service competitive with alternate means of communications," the study reported.

On the other hand, NRC warned that since the Postal Service is experimenting with a number of time- and worker-saving projects — like Ecom and Zip-Plus-4, which concerns the proposed nine-digit Zip Code — it should keep labor unions informed of electronic mail activities. This should be done "to make sure that they implement these different programs in a smooth way which doesn't drastically affect the labor force," the NRC document noted.

Finally, although the Postal Service predicted at its Ecom inauguration that the system would handle about 70 million pieces of mail per year by 1985, a study done by Arthur D. Little, Inc. in 1978, and mentioned in the NRC report, claimed that by 1985 a Generation III — or true electronic mail system — could be handling at least seven billion pieces of first class mail. However, Ecom's eventual volume will depend upon the growth of the system and the amount of mail, which, according to the Postal Service, "is continuing to grow."

This Week

IN DEPTH

Learn Company Tactics ..... Follows Page 90
Interview: Jean-Jacques Servan-Schreiber ID/9
The Cashless Society ID/15
Application Systems Development ID/25
Third Decade of Concern ID/31

NEWS

'Tame,' Analysts Say of IBM's Services Reentry 5
Public Utility Commissioners Condemn Settlement ... 6
House Hears Concern About Bell Settlement 7
Reagan's 'New Federalism' Fires Controversy 9
Education Level Tips Salary Scale Toward Males ... 10
Users Cite Pressing Office Automation Needs 11
Which Data Training Vendor Is Right for You? 14
Honeywell Institutes Price Hikes of Up to 20% 15
GAO: Ease Access to Personal Wage Data Bases .. 16
Pacific Seen Lacking Resources for Videotext 17
Satellites Replacing Need for Cables Myth: Exec ... 20
Computer Saves Pa. $12 Million in Medicaid 22
System Passes With Flying Colors 23
Language System Solves Translation Dilemma 24
CAD/CAM Helps Design, Manufacture Airbus 26
IBM Loses Suit Over Suitor's Ties With Staffer 27
Invoice System Sends Bills Pronto to Customers ... 28
Study Examines High-Tech Lure of Sun Belt 29
System Repair Ends County Tax Break 31
Disk Switch May Save Hospital Megabucks 32
Architectural Firm's System Spots Problem Areas .. 33
Dynabyte 5300 Earns Worthy System Tag 34
Do You Know Where Your Vegetables Are? 36
Invalid's Parking Tickets Blamed on DP Error 38
Component Supplier Logs On In-House 39
Oil Firm Strikes It Right 40
Parent Picks Package for Operating Companies 42
On-Line CPU Reduces Registration Chaos 44
Central GM Net Eases Distribution Methods 48
Pranksters Gain Access, Destroy Programs 49
Hardware Firm Gauges Uses of Own Software 50
Distribution Package Solves 'Happy Problem' 52
Insurance Firm Reaches for 'Star' 54
'Payroll' Fits Plastics Firm's Mold 55
System Switch Tidies Up UK Houseware Firm 56
Accounting Firm Builds Business With Package 58
Package Puts Freight Handler on Fast Track 65
Entomologist Transforms System Into 'Biolab' 67
System Makes Cruise Booking Smooth Sailing 68
System Drives Auto Dealer To Better Service 71
Distribution Department 'Shops for Logic' 73

EDITORIAL

Editorial: This Bit-Boggling World 80
Getting Ahead In DP: Your Career Timetable 81
Computer Matching vs. Privacy 81
Job Burnout: Is Management to Blame? 84
French Government Takes On the Development 88

SOFTWARE & SERVICES

How Secure Your Site? Report Gives Equation 91
Mapping Package Operates on IBM, PCM 94
'Scon' Handles IBM MVS 97
VRX Tool Shows Performance Stats 99
Health and Safety System for System/38 100
CP/M Simulator for DEC PDP-11, VAX-11 101

COMMUNICATIONS

Study: Phone Co. Restraints to Be Eased 107
Local-Area Net Link Acts as DEC Co-Processor ... 108

SYSTEMS & PERIPHERALS

DP Prevents Guitar Maker From Fretting 109
HP Adds Laser Printer Capable of 45 Page/Min ... 110
IDM Data Base Machine Expanded Downward 111
Cartridge-Based MSS Stores 55G Bytes 114

MINIWORLD

Sanyo Unveils Desktop Trio 115

OFFICE AUTOMATION

Study: Daisywheel Printers Used Most 119

COMPUTER INDUSTRY

Magnuson Acquisition Collapses, Chairman Quits .. 123
Silicon Valley Firms Seen Leaving 123
Mainframe Vendors Post Mixed Results 125
Firm Aims at Future With Strategic Software 129
DEC Posts 42% Increase in Earnings 132
Can Dallas Support Two Computer Centers? 133
MIS Managers Seen Key to Micro Evolution 134
Report: Five Factors Slow Home Shopping 138

ADVERTISING INDEX 178

QUIZ

Test your sorting IQ. Take SyncSort's "Top 10" exam. (Please!)

Call (201) 568-9700.

For all the right answers.

READY? OPEN YOUR TEST BOOKLETS AND BEGIN!

1. Here are the 10 largest commercial-banking companies.*
How many use SyncSort?____

Citicorp	**Continental Illinois Corp.**
BankAmerica Corp.	**Chemical New York Corp.**
Chase Manhattan Corp.	**Bankers Trust New York Corp.**
Manufacturers Hanover Corp.	**Western Bancorp.**
J. P. Morgan & Co.	**First Chicago Corp.**

2. Here are the 10 largest life-insurance companies.*
How many use SyncSort?____

Prudential	**John Hancock Mutual**
Metropolitan	**Connecticut General Life**
Equitable Life Assurance	**Travelers**
Aetna Life	**Northwestern Mutual**
New York Life	**Teachers Insurance & Annuity**

3. Here are the 10 largest utility companies.*
How many use SyncSort?____

AT&T	**Commonwealth Edison**
General Telephone & Electronics	**Southern California Edison**
Southern Company	**Consolidated Edison**
Pacific Gas & Electric	**Middle South Utilities**
American Electric Power	**Public Service Electric & Gas**

4. Of the 30 companies listed above, how many use SyncSort?____

CORRECT ANSWERS: SyncSort is now the sorting choice of...
1. 9 of the 10 largest commercial-banking companies.
2. 9 of the 10 largest life-insurance companies.
3. 8 of the 10 largest utility companies.
4. 26 of the 30 companies listed above.

EXPLANATION OF ANSWERS: Sorry, professional ethics prevent us from telling you specifically which companies on the list use SyncSort. But we'll be only too glad to tell you why:

- *Performance.* SyncSort has a higher I/. than any of its "competitors"—the result of the ever widening "sort-performance gap" between our programs and IBM's. SyncSort simply does more sorting work for far fewer resources, as the charts at left indicate. And to busy processors like those above, that's a matter of practical, not academic, interest.

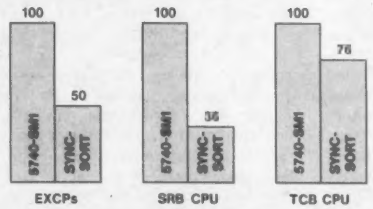
- *Productivity:* For programmers, SyncSort removes the "grind" from sorting. Using features like INCLUDE/OMIT, SUM, INREC/OUTREC and others, the time required for simple applications can often be reduced from five programmer days to one programmer day.

- *Service:* Need a little help on tricky sorting questions? Call our Technical Service faculty. They're experts at providing fast, accurate and sympathetic coaching. More than 85% of all requests for help are resolved within 24 hours.

GRADING YOURSELF: If you answered Question 4 as follows...
- 23 to 30 companies use SyncSort—give yourself a big, fat A. You're so smart you're probably a SyncSort user already.
- 15 to 22 companies use SyncSort—give yourself a B. SyncSort can help you get top-grade sorting on the final exam.
- 7 to 14 companies use SyncSort—give yourself a C. Go back to the library and review sorting problems and how SyncSort solves them.
- 0 to 6 companies use SyncSort—give yourself a D. Your sorting is in trouble. Call us immediately for remedial coaching!

*According to Fortune Magazine 1981

SyncSort OS Rel. 2.4 vs. BLOCKSET IBM's 5740-SM1, Rel.5



syncsort INC.

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

IBM Reenters the Time-Sharing Business

(Continued from Page 1)

that can be used for applications development. The productivity systems are basically the same as the VM and MVS operating systems available commercially. At this point MVSPS and VMPS are only available through the Information Network, IBM said.

Also announced was Information/System II, an on-line directory of IBM products and educational offerings.

VMPS features information capabilities for end-user personal computing. Based on VM/System Product Release 1, the operating system can be accessed through full-screen devices such as IBM 3270-type terminals. Associated 3200 series printers provide data set printing as well as screen image printing. VMPS also offers a data processing option for users requiring on-line applications for special projects or for those waiting for programs to be installed on an in-house system.

IBM said that programs developed with the productivity systems can be transferred to a firm's in-house IBM processors.

DP professionals can use the network as a development center to write and test MVS-, VM/370- and DOS/VSE-based programs. Once installed on an in-house system, the programs can be maintained and modified using the network's facilities, IBM said. The network is also offered as a supplement to a user's in-house system during high-usage periods.

At this point, IBM is using leased lines to connect 3705 communications controllers in each of the branch cities with the Tampa data center.

Marketing Group

Marketing for the Information Network will be handled through a separate marketing group that will work in tandem with IBM's newly formed National Marketing and National Sales groups, IBM said.

The separate marketing group appears to be an early departure from IBM's recently announced reorganization. One of the motives behind the reorganization, observers have noted, was to open up IBM's full product line to all IBM users and to eliminate occasional competition among IBM divisions.

An IBM spokesman said that the Information Network will complement the firm's hardware line rather than compete with it. Some analysts, however, said that the network may affect IBM's distributed processing hardware market, hurting already sagging 8100 sales and possibly impacting 4300 and System/38 sales.

What IBM's Network Will Cost

How much will IBM's Information Network cost to use?

Fees for the network are divided into two basic groups: Computer Resource Units (CRU), which are a combination of CPU seconds and I/O operations, and a Network Resource Unit (NRU). There are also storage charges and access charges, IBM said.

For all users, there is a minimum $200/mo fee plus a $2/mo ID charge. Charges are based on either prime time or nonprime time usage. The network is available from 6 a.m. to 12 p.m., Monday through Saturday (except national holidays) and prime time is 8 a.m. to 8 pm. Eastern Standard Time, Monday through Friday.

During prime time, VM Productivity System CRUs cost 35 cents and MVS Productivity System (MVSPS) CRUs cost 40 cents. The operating systems cost 20 cents in nonprime time. NRUs are priced at 2 cents during prime time and 1 cent during nonprime time, IBM said.

Access charges come in two forms. Users with leased lines connecting their installation with the closest 3705 controller can get a dedicated access port for $450/mo. If the user is accessing the network via switched lines, a low-speed line (110- to 1,200 bit/sec) costs $5/hour ($2.50 during nonprime time) or high-speed lines (2,400- to 4,800 bit/sec) cost $7/hour ($3.50 during nonprime time).

Storage charges for nondedicated direct-access storage are $2/day per 1M byte of memory. Under MVSPS, users can get dedicated direct access storage for $1/day per 1M byte or mass storage for 8 cent/day per 1M byte, IBM said.

Discounts are available for users spending more than $500/mo, IBM said.

IBM Stayed Out Of T/S Market Almost a Decade

IBM was an active competitor in the services business until 1973, the year it settled a private antitrust suit with Control Data Corp. Under the terms of that settlement, IBM sold its Service Bureau Co. (SBC) to CDC for $16 million and agreed to stay out of the services industry for the next six years.

Although IBM agreed to stay out of the U.S. services business, it remained active in this segment of the computer industry in Canada and Europe.

At the time that CDC acquired SBC, the services company had revenues of about $60 million. Today, ironically, CDC's service bureau unit is considered the industry's largest service firm; its 1982 revenues are expected to exceed $700 million.

Legal Issues Unresolved

IBM's announcement last week of the IBM Information Network appears to leave unresolved certain legal issues regarding IBM's presence in the services industry.

Under a 1956 Consent Decree, IBM agreed to operate its services company as an "arm's-length" business, recalled Fred Lafer, senior vice-president and general counsel for Automatic Data Processing, Inc. That separation assured that IBM could not cross-subsidize SBC with revenues from its other operations, he said.

The specter of separation may be a reason for IBM's designation of its Information Network as an independent business unit, one observer said.

Moreover, it is unknown what effect the government's dropping of the antitrust suit against IBM will have on the 1956 Consent Decree. The Association of Data Processing Service Organizations, Inc. (Adapso), the trade association for the services industry, is seeking a clarification of this issue, Lafer, who is also Adapso's vice-chairman, explained.

First Step in FAA Plan: Replacing 360s

(Continued from Page 1)

year National Airspace System (NAS) plan will cost almost $9 billion. It will lead, the FAA said, to a major consolidation of agency facilities, manpower reductions of one-third and savings of almost $20 billion by the end of the century.

Saying, "we will not go for a program that includes technological risk," Helms explained the NAS planning process was "not a hardware problem." The agency can buy the mainframe power it needs to anchor the NAS upgrade without developing a "dedicated FAA computer," he said.

The 20-year project will begin with an IBM-compatible hardware upgrade to give the agency time to develop new software for additional future automation and to phase in more sophisticated air traffic controller equipment and flight support facilities, the latter to include radar, communications, landing and weather tracking and reporting systems.

"Certain of the advanced technologies just could not be included," according to Helms, who noted, for example, that although an integrated digital voice and data satellite communications systems is almost certainly in the NAS future, the present program just does not afford enough design and development time to include that kind of system.

Although much technical and financial detail of the NAS proposal was not immediately available, Helms said dollar estimates for the various project phases will be released later this month and a request for 9020 replacement proposals should be issued to potential bidders this summer.

He estimated implementation costs will be between $8.7 billion and $9 billion for the first 10 years. The FAA proposes to raise the money through new taxes on aviation gasoline, jet fuel and airline tickets. The taxes, which the FAA said have already received initial congressional approval, would raise approximately $3.4 billion in a year.

Helms also said the Office of Management and Budget has favorably reviewed the NAS plan and tax increase proposals. Helms added, "The President strongly supports it; I anticipate no opposition within the administration."

Helms said he had discussed the plan with "a number of senior executives" of companies that are the potential suppliers of the NAS hardware and software. He reported those companies are enthusiastic about the program and the FAA does not expect any problems acquiring the systems and services called for in the plan.

Announced on Jan. 28, highlights of the NAS proposal, which Helms said will "get underway very rapidly," include:

- Concurrent with the 9020 replacement project, the FAA will contract for software design and equipment for new air traffic controller consoles and displays, known collectively as "sector suites."

The planned sector suites will allow one controller to do the work presently performed by three or four, according to Helms. Moreover, the projected system should be so efficient, he said, that the agency is working with several universities to develop continuing education programs controllers can pursue during slow periods.

- Facility consolidation will lead to a reduction from about 200 air route traffic control centers and terminal radar control rooms to about 60 installations by the year 2000. Every installation will use the same computers and sector suites. Centralized data bases, distributed data processing configurations and remote diagnostic and maintenance capabilities are planned.
- The existing 300 flight service stations, which provide weather data and other services to pilots, will be consolidated into 61 automated sites. The computers for the first 41 of those sites are already ordered and will be delivered by 1983.
- New ground-to-ground-to-air communications systems to be phased in will include collision avoidance systems, microwave landing systems and an eventual nationwide Department of Transportation telecommunications systems integrating voice and data transmissions for air traffic control and system management.

Most of the automation should be completed by the early '90s, according to Helms, who explained the projected $20-billion savings will come from the decreased number of facilities; lower communications costs; and an across-the-board one-third reduction through attrition of all levels of FAA employees, including controllers and systems maintenance personnel.

'Tame,' Say Analysts, Rivals Of IBM's Services Reentry

By Marcia Blumenthal
CW Staff

Less than a month after the government dropped its 13-year-old antitrust suit against IBM, the titan edged back into the service bureau business with the announcement of its Information Network.

Although IBM's reentry into this market, a business from which it was excluded in 1973, has been rumored for months, analysts and competitors interviewed last week generally agreed IBM's initial Information Network offerings were pretty tame — far less spectacular than expected.

However, many of those interviewed predicted IBM would use its network as a springboard into increased communications services and as a way of "being all things to all users."

The IBM Information Network is a "separate business unit" of the firm, a company spokesman said. Carefully avoiding calling the unit a service bureau, IBM said its Information Network had its own dedicated sales force that serves seven metropolitan locations, but declined to disclose how large the sales force was. However, the company said its two marketing divisions would also be selling the service on a referral basis.

"I seriously doubt IBM will have much of an impact on the current computer services market," maintained Thomas J. O'Rourke, president of Tymshare, Inc.

Little Cost Advantage

Services are heavily labor-intensive products and IBM will not have much of a cost advantage in this market. IBM's strength is in the production of hardware, he continued. IBM's presence in the processing services market may be a way to "gently and carefully bring users up to the point where they are ready to buy hardware," he added.

Last year, revenues from the processing services industry were about $9 billion and this portion of the industry is growing at about 20% annually, according to statistics gathered by the Association of Data Processing Service Organizations, Inc. Current mainstream processing services competitors have developed a stable of proprietary software and are no longer extensively selling plain vanilla time-sharing services, which appear to be a large part of IBM's initial offering.

IBM's forte has not been applications software, according to some observers, although the firm is offering many applications products on the network.

IBM's eventual position in the market depends on the amount of resources it is willing to invest, remarked Arthur J. Marks, vice-president of marketing at General Electric Information Services Co. (Geisco). Traditionally, IBM's strategy has been to have the "least amount of diversification from its existing business," he maintained.

On the other hand, "IBM's strategy has been never let anything get between you and your customer," maintained Howard Anderson, president of The Yankee Group, a Boston-based consulting and market research firm.

Anderson predicted IBM would eventually become a "super-service bureau," garnering revenues of about $500 million by 1985. IBM will use this capability to plug gaps in its product line, he maintained.

Besides processing, some analysts view the IBM Information Network as a means of warding off AT&T and its Advanced Communications Service as well as service bureaus that supplement their own private networks with public networks.

In the long term, IBM will evolve its network into an electronic mail service, one analyst predicted.

	1979 Revenue	Growth*	1980 Revenue	Market Share
Automatic Data Processing	$409	24%	$506	7.3%
Control Data Corp.				
Cybernet	187	20%	225	7.3%
SBC	233	20%	280	
Electronic Data Systems Corp.	313	31%	410	5.9%
GE Information Systems Co.	290	21%	355	5.1%
Tymshare, Inc.	160	28%	205	3.0%
McDonnell Douglas Automation Co.	135	19%	161	2.3%
Computer Sciences Corp.	129	16%	150	2.2%
United Information Systems, Inc.	96	20%	115	1.7%
Bradford National Corp.	89	19%	106	1.5%
Shared Medical Systems Corp.	83	27%	105	1.5%
NCR Corp.	91	10%	100	1.4%
National CSS, Inc.	77	17%	90	1.3%
Comshare, Inc.	60	47%	88	1.3%
Planning Research Corp.	63	24%	78	1.1%
Xerox Computer Services	60	30%	78	1.1%
Equifax, Inc.	55	36%	75	1.1%
Boeing Computer Services	59	25%	74	1.1%

* Growth includes any acquisitions, mergers and new ventures from which suppliers can claim revenues for calendar years 1979 and 1980.

International Data Corp. Chart

U.S. Companies With Processing Services Revenues of $50 Million or More (Figures Shown in Millions)

Filesaver

The Most Advanced Resource Management System Available —Providing complete File Security.

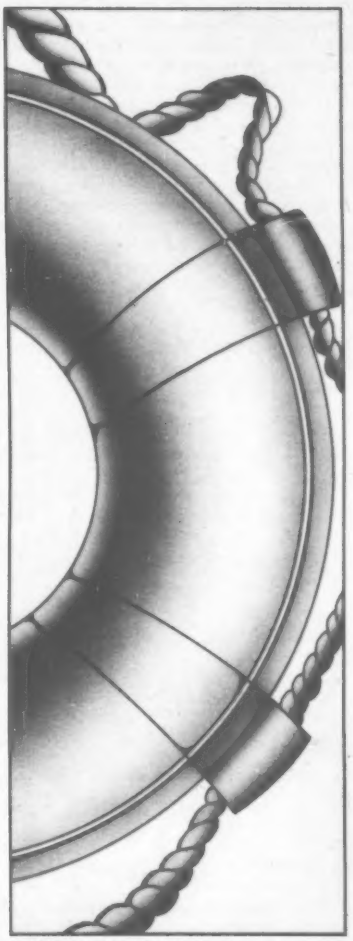
The components that make up CA-DYNAM have been designed to meet the challenge of today's constantly changing operating system.

The result is a unified system for increased functional capabilities and optimum device utilization. CA-DYNAM is a system that not only improves security and programmer productivity, but it also provides outstanding flexibility and ease of operation.

It's a system that had to be... with the quality you've come to expect from Computer Associates.

For more details, reply today!

CA-DYNAM™



© 1982 Computer Associates International, Inc.

HEADQUARTERS
Computer Associates Building
125 Jericho Turnpike Jericho, NY 11753

Offices in the United States, Europe, Australia, and Canada.
Distributed in 32 countries world-wide.

MAIL THE COUPON OR CALL TOLL-FREE

800-645-3003

[NY State Call: (516) 333-6700]
CANADA Call: (416) 842-2110

Member Software Industry Association ADAPSO

CW 020882

COMPUTER ASSOCIATES

125 Jericho Turnpike, Jericho, NY 11753
YES! Send FREE information on CA-DYNAM

Name _____
Title _____
Company _____
Address _____
City _____ State ____ Zip _____
Phone _____ CPU _____ OP/SYS _____

Also send info. on:

☐ CA-SORT
High Performance Sorting
☐ CA-JASPER/JA
Job Accounting/Reporting
☐ CA-EARL
Flexible Report Writer
☐ JASPER/RT
Realtime Performance Monitor
☐ CA-DRIVER
Job Management System
☐ CA-DART
Dynamically Accessible Reporting Technique
☐ CA-VM/SOFTWARE
VM/CMS Products

Public Utility Commissioners Condemn Settlement

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The proposed AT&T/Justice Department agreement ending the government's antitrust suit against the phone company was condemned by public utility commissioners from 11 states last week. Testifying before the House of Representatives Telecommunications Subcommittee, the officials also warmly endorsed H.R. 5158 — the rewrite of the 1934 Communications Act recently drafted by the subcommittee — and strongly criticized the competing Senate bill, S. 898.

The officials are all members of the National Association of State Regulatory Utility Commissioners (Naruc), one of the more effective lobbying groups in Washington. Usually, Naruc is a firm supporter of AT&T.

Implementation of the Justice Department/AT&T agreement "unattended by remedial congressional legislation, could result in precipitous and unnecessary increases in local telephone rates and substantial encroachment upon federal and state regulatory jurisdiction," Naruc President Edward F. Burke said.

To forestall these increases, his group called for legislation requiring the Bell operating companies to be divested before assets are transferred to AT&T. This would prevent AT&T from "stripping the Bell operating companies of their assets beforehand," explained John E. Bryson, president of the California Public Utilities Commission.

Bryson and other members of the Naruc panel stressed the need to assure that the Bell operating companies would be financially healthy after divestiture. They argued that it would be a mistake to bar the Bell operating companies from selling Yellow Pages advertising — as specified by the settlement and both pending "rewrite" bills — because this is a major source of revenue to the operating companies.

There also appeared to be sentiment for allowing the Bell operating companies to offer "enhanced" services, as defined by the Federal Communications Commission's Computer II decision.

Naruc's Burke said the association has not officially endorsed the idea. However, in answer to a question from Rep. Matthew J. Rinaldo (R-N.J.), he said that requiring the operating companies to offer only regulated services would "eventually reduce their financial viability."

Bryson added that the Bell operating companies should be allowed to offer "certain enhanced services uniquely suited to provision through the exchange network. Prime examples are call forwarding, call waiting and 'custom calling' answering services.

"These are all products of ratepayer-funded Bell system research and development. All have existing or potential markets and all represent technological alternatives, which may have to be abandoned if it is forbidden to offer enhanced services through the local network... Consequently, we recommend that ... H.R. 5158 be amended to provide expressly that exchange carriers may offer enhanced services integrally related to their exchange facilities," he said.

Interfaces Tie IDMS, Graphics Systems

(Continued from Page 1)

makers.

Chief executive officers of organizations will be able to access IDMS-based applications and obtain information in full-color charts and graphs that are generated via Computer Pictures Corp.'s Trend-Spotter system and a touch-sensitive video display system called Touch Track, the two firms explained in a joint press conference here.

"This represents the first time a CEO or top management person can truly access computers and get the kind of information needed to run a business," John Cullinane, president of Cullinane Database Systems, claimed. He predicted the combination of data base and graphics technology "will turn top management and CEOs into enthusiastic users of computers."

Cullinane noted that his firm had explored the possibility of developing graphics capabilities, but found that the substantial amount of computer resources required to support this on a large mainframe was not a worthwhile expense. The need was to offload this function, he said, and when his company was introduced to Computer Pictures Corp. and its offerings, it seemed this was the logical answer.

"The net result is an arrangement whereby their capabilities are integrated with ours, which we can offer on an exclusive basis [as a data base management systems interface] to our users," Cullinane said. "Anyone who buys an application from Cullinane can get a complete menu of graphics capabilities."

The IDMS interface is currently available, according to Cullinane Executive Vice-President Robert Goldman. The software vendor plans to tie the graphics system into its IDMS general ledger and manufacturing packages, which are scheduled for release in the second and third quarter of 1982, respectively. The firm's banking customer information system, which already is available, is expected eventually to include the graphics interface, but Goldman was unable to specify when it would be available.

Graphics Option

Cullinane's applications graphics options reportedly will include the interface that will enable an IDMS application to provide the appropriate data to the Trend-Spotter system via the IDMS On-line Query system.

Trend-Spotter, which has been available for 14 months from the two-year-old Computer Pictures Corp., includes a raster-scan display terminal and up to 40M bytes of disk-based on-line storage. It was designed to enable non-DP professionals to create and manipulate graphics.

The newly released Touch Track display system is intended to enable top executives to review charts generated by Trend-Spotter, Computer Picture Corp.'s Chairman David Friend explained. It is a menu-driven system that features a touch-sensitive 8-in. diagonal screen that attaches to the Trend-Spotter color graphics video display. It provides charts with increasing levels of detail and specific information at the request of the user who touches blocks on the screen itself to produce the graphics on a CRT.

Input and output devices available with Trend-Spotter include a range of ink-jet and laser plain-paper color printers, a color-slide/SX-70 print camera, digitizing tablet, high-speed line printer for listings and directories and a modem for connecting Trend-Spotter via telephone lines.

Trend-Spotter prices range from $20,000 to more than $100,000, depending on the configuration. Systems are available in 90 days. Pricing for Cullinane's graphics options ranges from $15,000 to $35,000, depending on the scope of the user's system. Graphics options will be available upon delivery of specific applications.

Cullinane Database Systems is located at 400 Blue Hill Drive, Westwood, Mass. 02090. Computer Pictures Corp. is headquartered at 20 Broad St., Boston, Mass. 02109.

Color Graphics Linked to Seed

(Continued from Page 1)

ware option for the Seed DBMS. The Rainbow facility can be used with a variety of terminals and does not require the use of a color graphics terminal, according to the vendor.

The user retrieves information with a DRAW command, the vendor explained, and Rainbow's decision routines determine the most meaningful form for the output. Rainbow is said to handle details such as scales, labels, colors and the type of graph. A user can change a Rainbow decision and specify format if necessary.

By using a terminal's hardware and local intelligence, Rainbow reportedly minimizes data transfer and improves response time, the vendor explained, noting that it will supply interested parties with a list of supported terminals.

The Seed DBMS runs on hardware from a variety of vendors, including IBM, DEC, Hewlett-Packard Co., Control Data Corp., Prime Computer, Inc. and Perkin-Elmer Corp.

The Rainbow color graphics facility will be developed for systems other than the DEC VAX in the future, the vendor noted from its headquarters at 2300 Walnut St., Philadelphia, Pa. 19103.

THE COMPLETE LINE OF LINE PRINTERS: 800-243-9054*

Digital Associates offers the widest selection of line printer systems plug-compatible with virtually any minicomputer manufactured. For drum, chaintrain, band, belt or matrix technologies, just call our toll-free number and our experts will help you pick the printer that meets your exact requirements. Digital Associates has 27 different models to choose from so you don't have to settle for second best.

With prices of up to 40% off the minicomputer manufacturer's list, delivery in 30 to 40 days, installation by factory-trained technicians and a nationwide service network, it's easy to see why Digital Associates is the largest independent supplier of minicomputer printer systems.

The Printer Store

Digital Associates Corporation
1039 E. Main Street, Stamford, CT 06902 TWX 710-474-4583
*In Connecticut call (203) 327-9210

House Hears Concern About Bell Settlement

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T should turn its patents over to the Bell operating companies so that after divestiture the related royalties can help support local telephone service, according to Harold E. O'Kelley, president of Datapoint Corp.

The executive also wants the operating companies to continue marketing Yellow Pages advertising and owning presently installed terminal equipment. AT&T's Long Lines Division, he added, must be required to maintain its present contribution to local exchange operating costs. Otherwise, he said, the phone company will reap a giant hidden windfall.

O'Kelley, along with F. Thomas Hogan, representing the International Communications Association (ICA), was among those who spoke last week at a hearing convened by the House of Representatives Judiciary Committee's Monopolies Subcommittee. The subject of the hearing was the agreement negotiated last month between the Justice Department and AT&T which, if accepted by Judge Harold H. Greene, will end the government's antitrust suit against the phone company. Hogan, like O'Kelley, was concerned about the financial viability of the Bell operating companies after they are divested.

Poorer Services Feared

Specifically, Hogan felt the Bell operating companies might be forced to offer poorer quality service and/or charge excessive rates for access. Hogan added that the agreement between the Justice Department and AT&T does not assure local exchange access to privately owned telecommunications systems, nor does it prevent AT&T from cross-subsidizing competitive interstate long-distance services with revenues earned from the intrastate toll services that will be obtained from the Bell operating companies under the proposed settlement agreement and will remain a monopoly.

According to another participant in last week's hearing, James Devlin, president of U.S. Telephone Communications, Inc., a Dallas resale carrier, these intrastate toll services comprise 40% of AT&T's present long-distance business. "The temptation for anticompetitive abuse through cross-subsidization in such a situation is irresistible," he added.

One question that has come up repeatedly during the hearings generated by the settlement agreement is whether the operating companies should be allowed to provide enhanced services such as data base retrieval, store/forward electronic message offerings and on-line data processing rather than the regulated local exchange telecommunications and exchange access services they would be restricted to by the pending settlement agreement.

At last week's hearing, New Jersey Public Utilities Commissioner Edward H. Hynes said he "would not restrict New Jersey Bell from competing with AT&T across the board" with the possible exception of electronic publishing and cable TV services. Allowing the company to offer those two, he added, would be politically unwise.

The ICA spokesman, Tom Hogan, who is manager of communications technology for Monsanto Chemical Co., said that his group has not taken an official position on this question, but he personally supported expanding the Bell operating companies' charter as a way of assuring their financial health. And Hogan said he "would go along with allowing the Bell operating companies to offer on-line data processing services."

The procedure for reviewing the settlement agreement was attacked by Samuel A. Simon, executive director of the National Citizens Committee for Broadcasting, a consumer group chaired by Ralph Nader.

Once Greene accepts the agreement, Simon said, "court and public oversight of the divestiture process almost vanishes. AT&T alone is given the authority to devise the plan and resolve issues of importance." Among these issues, he added, are "how many operating companies will be created and whether Bell should be required to sell equipment at its net book value."

Although the Justice Department must approve the plan devised by the phone company, "the subject matter . . . is outside the . . . experience and expertise of the Justice Department. It would be far superior to have FCC [Federal Communications Commission] . . . or court review concurrent with the Department of Justice."

Datapoint President O'Kelley, after explaining that AT&T's present long-distance tariffs include a $12-billion allowance for financial support of local exchange services, said that "since AT&T continues to charge and collect a cross-subsidy for local service, it should be required to pay [this money] to the local operating companies so that local rates won't increase needlessly."

However, because of changes in the method of calculating access charges, O'Kelley said he doubts whether AT&T will be required to pay $12 billion per year to the operating companies. "If not, long distance rates should go down. But I don't believe they will," he said.

FDR™

AUTOMATIC BACKUP AND RECOVERY

INCREMENTAL BACKUPS
- Cyclic Backups—Only Dump Changed Data Sets
- Automatic Tracking of Backup Tapes
- Full Tape Utilization
- MSS Staging
- ABR will Pre Allocate Data Sets to be Restored
- TSO Remote Queuing
- SU60 Type Mods Available for VSI & OS
- **Stand Alone Restore**

ARCHIVING
- Based on Last Reference Date, User can Establish a Criteria for How Long a Data Set Should Remain on Disk Without Being Used
- Eliminate Unused Data Sets
- Enforce Data Set Naming Conventions
- Enforce Password and RACF Protection
- ABR will Automatically Backup and Scratch Data Sets off Disk and Keep Track of the Data Sets in its Own Data Base

DASD MANAGEMENT REPORTS
- Complete Backup Reports
- Unused Data Set Reports
- Invalid Data Set Name Reports
- Archive Data Set Reports
- Scratched Data Set Reports
- Simulation Reports
- Wasted Space Reports
- TSO and Batch Oriented Reports

Proven Record of Reliability

For Further Information or Free 30 Day Trial, Call or Write...

INNOVATION DATA PROCESSING

970 Clifton Avenue, Clifton, NJ 07013 • 201—777-1940

Available for IBM OS, VS and MVS.
Send for Free Poster

FREE TRIAL of our IBM 3270 Compatible Terminal!

Our IBM 3270 Compatible Stand-Alone terminal is so good, we're sure that once you've tested it, you'll settle for nothing less.

The reasons are simple. We offer you low prices for very high performance. The fact is that the majority of 3270 users who tested our terminal, bought it and more.

For a $2,350 terminal, the EM-3275/6 offers you:

- Full IBM 3270* Compatibility
- Integrated Controller/Display
- Dial-up and Leased-line Flexibility
- RS-232C Printer Attachment
- Optional Built-in Modem for Full Portability.
- Excellent Quantity Discounts
- 30 Day Delivery

$2350

Clip and mail the coupon, because if our features and prices interest you, then our performance will surely convince you.

CONTROL CONCEPTS
2361 S. Jefferson Davis Hwy.
Arlington, Virginia 22202
(703) 521-8866

OK, Convince Me

☐ Tell me more about the FREE TRIAL of your 3270 Compatible Terminal.
☐ Send more information on your EM 3275/6 Terminal with built-in Modem.
☐ Send leasing information.
I'm interested in purchasing terminals within the next: ☐ 1-to-3 months ☐ 3-to-6 months ☐ 6-to-9 months ☐ Longer

Name: _____
Title: _____
Company: _____
Address: _____
City, State, Zip: _____
Phone: ( )

*Subject to Trademark claims.

• A METHODOLOGY FROM YOURDON PRESS •

DEVELOPING STRUCTURED SYSTEMS:
A Methodology Using Structured Techniques

Developing Structured Systems: A Methodology Using Structured Techniques by Brian Dickinson is different from existing "standards-oriented" methodologies, which tend to be too rigid and to inhibit creative problem solving. This methodology encourages readers to tailor its suggestions and signals appropriate points for customizing. The book treats project initiation; analysis and design, studied at various levels of detail; system building; and system installation. Stressing iterative cycling, the book includes a full set of leveled data flow diagrams with related data dictionary entries and process descriptions; five appendices, including ones that describe problems of installing a methodology and present the concepts of model transformations in a detailed example; a glossary; and a bibliography.

360 pages; $40; softcover; ISBN: 0-917072-23-5

Yourdon Press 1133 Avenue of the Americas NY NY 10036 212 730-2673

SHIPPING INFORMATION: Specify quantity per title. Coupon prices include 75 cents per book for shipping & handling. Residents of California, New York & Washington states, add applicable sales tax. **Orders must be prepaid in U.S. funds. Or, charge your order on ☐ VISA or ☐ MASTERCARD. Card No.** _____

Signature _____ **Expiration Date** _____

☐ Enclosed is $40.75 for *Developing Structured Systems.*
☐ I'd like to know more about structured design. Enclosed is $25.75 for each copy of *Practical Guide to Structured Systems Design*, by Meilir Page-Jones.
☐ I'd like to know more about structured analysis. Enclosed is $25.75 for each copy of *Structured Analysis and System Specification*, by Tom DeMarco.
☐ I want to know more about database modeling. Enclosed is $15.75 for each copy of *Fundamental Concepts of Information Modeling*, by Matt Flavin.
☐ I also want to order *Software Design: Methods & Techniques*, a survey of various software design schemes available, by Lawrence J. Peters. Enclosed is $24.75.
☐ Please add me to your New Book Information mailing list.
☐ Please send me your catalog of publications.

Name: _____
Company: _____
Business ☐ or Home ☐ Street: _____
City: _____ **State:** _____ **Zip:** _____
Business ☐ or Home ☐ Telephone: ( ) _____

cw 2/82

Yourdon Press 1133 Avenue of the Americas NY NY 10036 212 730-2673

Nationwide on His Side, Pittman Takes on New Post

(Continued from Page 1)

ble's parent organization announced its decision to sell its Fort Worth operation. Pittman suddenly found himself at a crossroads in his professional development. The choice confronting him was simple but stark: Either he could remain with his current employer, which had made him an offer for an attractive new job, or he could leave the company and chart his career path anew. He chose the latter.

For Pittman, the jump from Equitable to Nationwide involved more than just a job change and a transfer from one region of the country to another. The move also presented him with a new set of management problems and thrust him into a work environment dramatically different from the one he had known during the preceding six years.

Remaking a Company

Pittman joined Equitable in 1975, not long after the company had been bought by the Equitable Life Assurance Society of New York, which saw the acquisition as an ideal chance to fulfill its dream of entering the property and casualty insurance business. As one of the new firm's five or six most senior executives, Pittman was given the mission of helping to remake Equitable into an efficient, smooth-running organization, and even today the company still bears the imprints of his formative influence.

"We had the unusual opportunity to start a company over, build a data processing organization and plan the work flow for an entire insurance firm from the ground up," he recalled.

For Pittman and the other charter members of Equitable's reorganization team, the experience of taking a corporation apart and putting it back together again in their own image proved a heady wine indeed. Not since the early 1960s, when he entered the computing field as an intelligence systems specialist for the U.S. Navy, had Pittman enjoyed such unbridled freedom to challenge old assumptions, discard outmoded procedures and experiment with new techniques and ideas. The company's management slate had suddenly been wiped clean, and Pittman and a handful of his colleagues had been given nearly free rein to draw on it as they pleased.

Changed Milieu

But when he finally resigned from Equitable to join Nationwide, Pittman's management milieu quickly changed. In one fell swoop, he went from a company with a small intimate inner circle of top executives to an organization with a large complex management bureaucracy, many of whose members equaled or surpassed him in authority.

In transferring from Equitable to Nationwide, Pittman also went from an environment with comparatively few constraints on his actions and decision-making power to a company with a large body of formal rules and regulations and a strong commitment to traditional methods of work.

The transition from a relatively informal to a highly structured job setting has forced Pittman to make some profound professional adjustments and has confronted him with a host of new management challenges. One of those challenges is the task of acquainting himself with the intricacies of his new employer's internal workings.

"A company's underlying rules of operations usually aren't posted publicly for all its employees to see," he said. "They have to be sought out and learned."

Identification Problem

Pittman also faces the problem of trying to identify his company's key personnel, both inside and outside its computing organization, and figure out what makes them tick.

"Penetrating a large organization is seldom easy to do," he explained. "I'm having lunch with a lot of people these days. In fact, I set an objective that, during my first year on the job, I would have lunch with every officer in the corporation. I'm more than 70% of the way through already.

"Moreover, I'm in the process of arranging visits to eight of our regional offices. I think it's important to our company's operation to identify the regional offices' concerns and find out what they expect."

In his current position, Pittman reports to Nationwide's senior vice-president of corporate services and oversees a computing department budget that this year will total about $42 million. He also supervises the activities of 840 technical personnel and is responsible for the administrative support of his firm's 12 regional offices.

EDP Auditors Set Conference For April 19-23

WINTER PARK, Fla. — "New Trends in Information Systems Control and Auditing" is the 12th conference on computer audit, control and security scheduled by the EDP Auditors Foundation for Education and Research, Inc. based here. The conference will be held April 19-23 in New York City's Sheraton Center Hotel.

It will include 14 tutorials, seven minitutorials and 35 talks. The tutorials will cover topics from "Introduction to System Software" to "Planning EDP Audits," while the minitutorials will range from "Auditing On-line System Availability" to "Supplementing the EDP Audit Staff."

Dr. Brandt R. Allen, computer fraud expert, will speak on "New Reseach into Computer Crime" and report on two studies on computer-related fraud.

Registration costs $695 for members and $745 for nonmembers. More information can be obtained from the EDP Auditors Foundation, Education Office, P.O Box 2051, Winter Park, Fla. 32789.

How Will States Shoulder DP Burden?

Reagan's 'New Federalism' Fires Controversy

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — This city is aflame with controversy over President Reagan's "new federalism" plan, a proposal to turn back to the states complete control of billions of dollars worth of federally managed or supported programs.

Although the administration is busily putting out fires left and right, assuring worried governors that the states will be able to afford the new burden, evidently little or no thought has been given to whether states have adequate administrative resources, including manpower and data processing capability, to handle new and drastically expanded program responsibilities.

Under the new federalism concept announced during Reagan's State of the Union address Jan. 26, the federal government would give $47 billion in programs to state and local governments.

This "single, bold stroke" proposed by the President would be cushioned by a 10-year transition period and federal guarantees of the money needed by the states to assume control of the programs.

In return for taking over complete administration of Medicaid, the federal government would relinquish any responsibility for welfare and food stamps as well as another 40 programs for highway construction, transportation, social services, education and the like.

"In a single stroke," Reagan said, "we will be accomplishing a realignment that will end cumbersome administration and spiraling costs at the federal level while we ensure these programs will be more responsive to both the people they are meant to help and the people who pay for them."

Mixed Reactions

It was hard to say which response to the proposal was louder: the cries of pain in governors' mansions across the country or the sound of head-scratching in state and municipal government offices from Albany to Sacramento.

Administration and state spokesmen readily point out it is entirely too early to tell what the practical effect of new federalism will be. The transition period will be long and states will have great leeway in deciding just how much they want to do and how to do it.

But what is already clear is that cutting the federal bureaucracy is no guarantee there will be less fraud, waste and abuse in the affected programs as the White House insists. Collectively, state governments are a much larger bureaucracy than the federal establishment, and states have a decidedly worse record for deficit financing and spiraling government spending.

In the area of data processing resources, state and local governments are already at a distinct disadvantage compared to the federal government and private industry when it comes to accepting new administrative burdens.

The National Association for State Information Systems (Nasis) has consistently reported for a number of years that state DP departments are plagued with problems recruiting personnel and updating obsolete computer systems.

According to Nasis Director Carl Vorlander, "even a 1% increase" in personnel needs would be "a significant problem" for state DP operations. There is also some validity to the idea that, in terms of management economy and efficiency, some programs benefit from central administration, he pointed out.

Vorlander noted that changes in federal and state laws and regulations routinely require software changes and redirection of manpower.

The new federalism, however,

Analysis

could magnify problems related to that process many times over, he said, suggesting "we are going to have to think about transferability and portability so that . . . we don't have 50 states all trying to do the same thing at the same time."

For its part, the White House Office of Management and Budget (OMB) — the same office that requires regulatory impact statements before it will approve any new federal agency actions — said the details of the new federalism have yet to be worked out.

So far the concept has been only "developed in its broad sweeping elements," according to OMB spokesman Edwin L. Dale Jr. He maintained that the "swap element" of the program's major components — Medicaid, welfare and food stamps — will ensure there is "no extra management burden" on the states, although this incorrectly assumes that the programs are administered in similar fashion and can simply be traded one for one.

30-50% SAVINGS

BDS, your independent printer supplier, has the most cost effective answers to your exact line printer requirements.

With *savings* from 30–50%.

With printer speed ranges from 100–1800 LPM.

Diversification as needed, Matrix, Graphics, Band, Drum.

And *quick delivery*—30 days in most cases.

Now BDS adds even more.

TURNKEY SERVICE.

Line printer, interface, and controller, *delivered* at your door. Plus *installation*. (Over 2000 installed.)

One call to BDS at 800/227-7342 is all it takes. Service available in *over 100* U.S. cities.

Need to know more? Call or write today for your local *BDS Sales Representatives*.

To: **BDS Corporation**
1120 Crane Street
Menlo Park, CA 94025
(415) 326-2115
TWX 9103732005 (BDS MNPK)

The Computer System I Use:

Name

Title

Company

Street

City State Zip

Telephone ( )

Ext

(the following companies all have registered trademarks)

HP
3000 SERIES 30, 33, 44
3000, SERIES I, II, III
250/300 SERIES
1000, 21 MX SERIES

HONEYWELL—LEVEL 6

BURROUGHS
B80/800
B1700 thru B7800

DATA GENERAL
Nova
Eclipse

TI-INTERDATA

DEC
PDP8
LSI-11
PDP-11
VAX-11/780
DEC 20

ICL FAMILY

IBM-SERIES 1, SYS 34/38
MAINFRAME-360/370/303X/4300

WANG 2200, MVP
COMMUNICATION PROTOCOLS
IBM, UNIVAC, BURROUGHS
AND X-ON/X-OFF

and most others

BDS

"IT PAYS TO HAVE THE RIGHT CONNECTIONS"

Education Level Tips Salary Scale Toward Males

By Bruce Hoard
CW Staff

ANAHEIM, Calif. — The average male information manager earns $7000 more per year than his female counterpart because he has a better education.

That was Bette Primrose's interpretation of a recent survey performed by the International Information/Word Processing Association, (IWPA) which sponsored its 1982 Spring Symposium here last week.

Primrose, division manager, administrative services with CH2M Hill, asked her predominantly female audience, "Do those figures surprise any of you?" when she unveiled the above salary figures, reflecting higher pay for males. The gap between the two sexes should close considerably over the next five years, she contended.

The IWPA performed the survey because it believes there is a trend toward the development of one leadership position for all office automation functions. And that information manager will be required to have knowledge in many areas, including word processing, DP, electronic mail, telecommunications, local-area networks, general management and fiscal management.

Chance for Secretaries

Secretaries have a chance to be that person, Primrose maintained, saying that many among their ranks have taken advantage of word processing to move up the office automation career ladder.

CW at IWPA '82

There were 400 respondents to the survey, of which 124 qualified as information managers. Of those, 62 were female and 61 male, with one "no answer."

Overall, 77% of the respondents had been in their current position for less than four years. Broken down further, the figures were 78% and 76%, respectively, for men and women. Sixty-three percent of the males reported they had been in information management for more than five years. The corresponding figure for women was 71%.

Primrose interpreted the above numbers by commenting, "And it tells us something else — females have more experience."

According to the survey, 81% of the respondents said they managed more than four office technologies. The most common were word processing, telecommunications, electronic mail and DP. She was quick to add she felt telecommunications in this instance meant point-to-point word processing.

Primrose remarked that the two most critical office technologies are data base management and telecommunications, departments which she termed, "the keys to making all the other things work." One of the most telling male educational advantages over females was evinced by a comparison of the numbers of the two groups who were under age 36 with bachelors degrees.

According to Primrose men held the edge, 31% to 22%. Two of the women respondents did not have high school degrees and Primrose congratulated them for their achievements. She also imparted some advice to other women: "Get a degree, you're going to need it."

Education Gap

The education gap opens wider when the numbers of the two sexes over age 36 with bachelors degrees were tabulated: 80% male, 36% female. Overall, 72% of respondents had at least an associates of arts degree; 63%, a bachelors degree.

Asked whether they considered technical or management skills to be more important for their careers, 65% favored management and 15% technology. Primrose said that the response underlined the role of the human aspect, "People have to bring about these changes."

However, the respondents seemed to contradict themselves when asked to name the five individual skills they considered to be most important. An operable knowledge of the equipment was their most common answer, followed by better supervisory skills and accounting and financial knowledge.

Primrose said there was no one prevalent title for most respondents, indicating that the concept of an information manager is still evolving. Upon further questioning, the survey discovered that the respondents' supervisors usually report to a top manager, most commonly one in charge of finance or accounting.

According to the survey results, optimism is a characteristic of information managers. A convincing majority of 85% said they were happy with their current position, and 87% claimed their job opportunities for the next five years were sufficient.

Another characteristic shared by the group is stress, Primrose noted. And one of the prime reasons for that stress is a lack of knowledge shown by top management and the inappropriate demands that come from it.

"The future is wide open," she declared. "It's up to us, ladies and gentlemen, to decide what to do with it."

"I'll bring your IBM maintenance bill back down."

I'm Bob Rich, General Manager of Computer Maintenance and Leasing Corporation. (CMLC).

Over the last few years, how many times has IBM raised your maintenance agreement fee? Once? Twice? Six times or more? No matter how often – you're paying too much.

With CMLC, you can have a comparable maintenance agreement for less. In fact, we can give you more service than IBM for considerably less.

Just compare IBM's contract prices with ours. Then compare the monthly and yearly savings you can enjoy.

Although you pay us a lower monthly fee, when your system needs maintenance you'll get service from an IBM engineer using IBM parts. (IBM bills us at their per-call rate, which we promptly pay.)

Plus, we offer extended hours of maintenance coverage – 11 hours per day, versus 9 hours under the standard IBM Maintenance Agreement. Mechanical replacement of "problem" machines. And a complete preventive maintenance program.

If you're tired of the uncertainties of IBM price increases, lock in some real savings with our full service maintenance agreement.

Fight back. Throw your old IBM maintenance agreement away and start saving on your maintenance costs.

Sound too good to be true? Give me a call today and I'll tell you how you can get more for less.

800-328-3384
(in Minnesota, call 612-599-5636 collect.)

CMLC
computer maintenance and leasing corporation

15350 31st Avenue North
Minneapolis, Minnesota 55447

List Complaints, Requests

Users Cite Pressing Office Automation Needs

By Bruce Hoard
CW Staff

ANAHEIM, Calif. — What is your company's most pressing need in the area of office automation? When that question was put to several attendees at the International Information/Word Processing Association's 1982 Spring Symposium, they responded with a combination of complaints and requests.

"I think it's a matter of cooperation within our organization," according to Glenda Richards, supervisor of information and records resources with Bectel Power Corp. in Houston. "There are too many people with their own ideas and their own personalities."

The lack of cooperation makes it more difficult for workers farther down the chain of command to perform their jobs, she said. She also expressed her displeasure with the corporate bureaucracy, saying it took three weeks to get approval for a project proposal.

More Speed

Evelyn J. Mayfield wanted more speed from her word processing equipment. The owner and manager of Mayfield Services in Woodland Hills, Calif., said "It takes us too long from the time we get a job from the customer to the time we put it out. There's too many procedures."

The procedures she griped about contributed to a 58-hour job done on word processors that could have been done faster on typewriters, according to Mayfield.

Training — or the lack thereof — was on the minds of several attendees. Martha Mosteller, word processor supervisor for the Huntington Beach, Calif., school district, said a "training system" was needed. Marilyn Taylor, intermediate clerk at Santa Ana College, claimed the number of trained word processing operators was not rising as fast as the work load.

Michael D. French of Microcomputer Business Applications Consultants said he wanted more reliable and compatible word processors. Although the CP/M operating system has helped bridge that gap, there is still a problem, he maintained. "Everybody thinks their way is the best," French said.

Robert S. Havener III was looking for a "uniform minicomputer that can be adapted to all our needs." Havener is manager of internal budget/administration for the Rouse Co. "We need a high-quality, inexpensive laser printer," Ranson Webster, president of Computing Resources, Inc., said. He would also like a "decent network," something he claimed no vendors are currently offering.

T. Talbot Seeley, M.D., president of T. Talbot Seeley Medical Corp., Diamond Bar, Calif., said he wanted "three things" from office automation: accounting services, word processing and information retrieval for medical systems. Was he satisfied with what he was seeing on the exhibition floor? "No, not yet," Seeley said.

Jack Kelly wanted something that probably will never be automated, but might be found in a few offices. "I would say people that can use English," he replied. He wants people that can express themselves by writing or speaking. Young college graduates cannot do that now, according to Kelly. "We need to professionally express ourselves."

Kelly is vice-president of Continental Computer, in Santa Ana, Calif.

CW at IWPA '82

Five Video Courses Offered on APL

TORONTO — Numetrix Ltd. is now offering five video courses covering aspects of the computer language APL. Each lesson is 20 minutes long and comes with a workbook.

It is a self-paced program that allows the end user to learn the language at his convenience.

Numetrix is the first company to release a video course on APL, it said.

The video course is available for $5,000 from Numetrix Ltd., 3 Church St., 5th Floor, Toronto, Ontario M5E 1M2.

Correction

The article entitled "Bank Puts Interest in Packaged Software" [CW, Jan. 22] incorrectly identified IBM 3694 proof machines as IBM 3964 machines.

On Page 129 of the December 28/January 4 edition, the same headline was run over two separate stories. The electronic mail system introduced by Applied Data Research, Inc. to complement its on-line word processing system, ETC, was wrongly described as a business tool fitting most 8080 and Z80 microprocessors.

When your program cancels, the computer is trying to tell you something. With DOS Abend-AID, it can.

DOS Abend-AID is a software product that transfers the manual, error-prone task of analyzing program cancels from the programmer to the computer.

DOS Abend-AID:

- Provides the exact reason the program terminated in brief, English text.
- Formats Working-Storage for direct reference to compiler listings.
- Prompts operator for a reason when cancelling a job.
- Gives next sequential instruction displacement relative to the program.
- Prints current records in DITTO format for all open files.
- Works for old and new programs in a test or production environment. No JCL changes required.

Whether your shop has one or 100 programmers, DOS Abend-AID provides a cost efficient and intelligent approach to solving program cancels.

Over 1400 OS users worldwide are benefiting from Abend-AID. Now you can benefit from the DOS version. It offers special support for COBOL, ASSEMBLER, RPG II and DL/1 operating in a DOS/VS or DOS/VSE environment.

Return the coupon today for additional information about DOS Abend-AID, or to arrange for your FREE 30 day Abend-AID Evaluation Package.

Please send information about DOS Abend-AID to:
NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
_____
Phone (___) _____
Operating System _____
Send to:
Abend-AID
COMPUWARE CORPORATION
29433 Southfield Road
Southfield, MI 48076

Aid
A Quality Software Product by Tomorrow
CW0208

or call toll-free:
800-521-9353
In Michigan, call: 313-559-9050

COMPUWARE
WORLD HEADQUARTERS
29433 Southfield Road
Southfield, MI 48076

Three Lead Pack in Multimedia DP Training

(Continued from Page 1)

Courses on film were expensive to update, change or reproduce, but Edutronics' investment in film was too great to allow it to switch to video until the mid-'70s.

The result was that by 1976 Deltak had become the largest selling vendor of multimedia training, according to Serge P. Beauregard, Deltak's group vice-president of Development and Operations.

IBM's unbundling of its software in 1969 was the critical event that pushed DP training to its present heights, because the industry giant then started charging its customers for training. "Prior to that, the training industry would have survived, but not flourished," according to Donald L. Sullivan, Wellesley, Mass.-based branch manager for ASI.

But flourish it has, and today both ASI and Deltak claim 90% of their clients from the Fortune 1,000 roster. Edutronics considers information regarding its customer base as confidential.

While ASI and Deltak offer a comparable number of courses in virtually the same DP-related fields, Edutronics offers only somewhat more than half that total.

Edutronics offers a larger percentage of DP-related courses, however, based on product manager Lynne Mills' estimate that "65% to 70%" of all its courses are DP-related, as compared with ASI's 34% and Deltak's 37%.

While Deltak currently offers no courses that are eligible for college credit, as opposed to ASI's 195, Beauregard claimed the reason lies not in any innate ineligibility of its courses, but rather in the burden eligibility reportedly places on the user.

"In order for a course to be eligible for college credit, a customer has to proctor examinations and send reports and grades to the accrediting institution," Beauregard said. "In questioning our customers we found they didn't want to be burdened with that kind of activity." Edutronics offers no courses eligible for college credit either.

Training Management

Training management is an area of considerable activity in all three firms. ASI's Advanced Systems Planning, Reporting Information System (Aspris) is an Apple Computer, Inc. turnkey system that "manages the function of training within an organization," according to Scott Hutchins, sales promotion.

The modular, on-line Aspris features the following subsystems: curriculum generation, task analysis, individual planning, data base, scheduling, administration and management. ASI updates task, course and curriculum data bases quarterly.

Deltak's batch training management system runs on "any large IBM mainframe from the 4300 up, under any operating system," Beauregard said, stressing that mainframes at multiple user sites can communicate with each other through networking.

Two weeks ago, Edutronics announced the availability in "mid-1982" of its microcomputer-based Training Information Management System (Tims). Built around the Texas Instruments, Inc. TI 99-4A microcomputer, the system is said to assess organizational needs, diagnose individual needs, monitor progress and document results.

Product Spotlight

Unique to Tims, according to Mills, will be its ability to communicate with a mainframe through an RS-232 interface. Edutronics' computer-aided instruction (CAI) system — the first complete course of which is slated for release March 1 — "automatically feeds into the training management system, furnishing diagnostics and progress information," Mills explained.

The fact that both Tims and CAI are on the same microcomputer is also unique, Mills said. It means that the CAI video is controlled by the microcomputer "so that the CAI is a training station and the user doesn't have to keep moving between computer and video screen," she said.

ASI's CAI curriculum is the most well developed of the three, with 163 modules available now, as opposed to Deltak's 25 and Edutronics' one. CAI can be used with any of three IBM program products — Interactive Instructional System (IIS), Interactive Instructional Presentation System or Interactive Instructional Authoring System.

Deltak, expecting to release 25 more modules in April, offers two CAI delivery systems. IIS/Deltavision features courseware developed with IIS and uses IBM 3270 terminals linked to an IBM mainframe. Micro/Deltavision features courseware developed with the Professional Authoring Software System and uses a stand-alone Apple II microprocessor.

Deltak and ASI have held annual training conferences, although ASI will not hold one this year, and is currently deciding whether to continue national conferences or go to regional shows.

Deltak's conference will be held this year in Chicago, April 4-7. Access 82 will feature the following keynote speakers: former President Gerald R. Ford; Harvey Poppel, senior vice-president of Booz Allen and Hamilton, Inc.; Dr. Marvin Minsky of MIT; and Dr. Eugene Jennings, professor of management at the Graduate School of Business Administration at Michigan State University.

Such big names are the norm for Deltak, which also offers its glamorous Advanced Technology Library, developed in cooperation with industry guru James Martin. Among the topics covered in the series are on-line and interactive systems; data base and data base management; telecommunications and data transmission; distributed data processing and computer networks; office automation and the office of the future; and system security, reliability, performance and productivity.

ASI offers courses with Dan McCracken, Frederic G. Withington, Dr. Peter F. Drucker, Dr. Richard L. Nolan, Harry Lorayne and Nate Newkirk. While all ASI's experts are eminently respectable, they do not have quite the pulling power of Deltak's stable of experts.

"We view ourselves as more workmanlike than marketing oriented," ASI's Sullivan explained. "What we consider more important is the essence of what we're doing, not appearances."

How does Deltak view itself? "We are not a product company, we're a training systems company," Beauregard said.

Edutronics, under new management since last fall, reportedly is updating its basic materials and seems poised for a comeback, according to industry observers.

	Advanced Systems, Inc. (ASI)	Deltak	Edutronics
General Subject Areas	DP; Supervisory, Management & Marketing; Personnel Development & General Interest; Manufacturing; Mathematics Engineering & Electronics.	DP; Management Development; Personal Development; Manufacturing; Science & Engineering; Sales & Marketing.	DP; Management; Communication Skills; Science & Engineering; Personal Development; Personnel Development; Sales & Marketing.
DP-Related Subject Areas	DP Concepts & Programming Languages; IBM Operating Systems; Project Design & Development; Project Management; Data Base; Distributed Processing & Data Communications; Systems Analysis & Design; Structured Techniques; Office Automation; System Security, Controls & Auditing; Productivity Skills; Non-DP End User.	DP Concepts & Programming Languages; IBM Operating Systems; Project Design & Development; Project Management; Data Base; Distributed Processing & Data Communications; Systems Analysis & Design; Structured Techniques; Office Automation; System Security, Controls & Auditing; Productivity Skills; Non-DP End User.	DP Concepts & Programming Languages; IBM Operating Systems; Project Design & Development; Project Management; Data Base; Distributed Processing & Data Communications; Systems Analysis & Design; Structured Techniques; System Security, Controls & Auditing; Productivity Skills; Non-DP End User.
Number of Course Modules*	2,300	2,123	1,500
Number of DP Course Modules	786	784	975
Number of Modules Eligible for College Credit	195 (all DP-related)	0	0
Minimum Lease Period	2 Years	2 Years	1 Year
Average Price Per Course Module	Purchase: $1,200 Lease: $42-$97/mo, Depending on Volume	Purchase: $1,750 Lease: $50-$125/mo, Depending on Volume	Purchase: $1,100 Lease: $40-$100/mo, Depending on Volume
Education Consulting Service	Yes	Yes	Yes
Training Management System	Yes	Yes	Available March
Computer-Aided Instruction	163 Modules	25 Modules	One Module; First Complete Course Due March 1.
Live Training	On-Site	Workshops	Workshops, Seminars, (Both on-site and regionally)
Number of U.S. Offices	29	44	11
Foreign Countries	30	13	20
Revenues	$40 Million + 1981 Worldwide	$67 Million 1981 Worldwide Contract Closings	Confidential

Source: ASI, Deltak, Edutronics

*"Module" here signifies a basic unit of instruction that in some cases comprises a complete course, while some courses can contain several modules.

Major characteristics of the three leading multimedia DP training vendors.

Multimedia Training Poll Finds Deltak in Top Spot

By Marguerite Zientara
CW Staff

BETHESDA, Md. — Deltak, Inc. is the first multimedia data training vendor a potential client would turn to in 10 out of 10 categories, according to Brandon Systems Institute, Inc.'s (BSI) 1981 Annual DP Training Survey. Sent to 1,500 training coordinators in organizations of all sizes throughout the U.S. and Canada, the survey attracted 290 replies for a 19% response rate.

The following list of categories indicates the number of people who said they would first turn to Deltak, ASI, Inc. or Edutronics. In order to be counted, a company had to be mentioned at least five times.

- Beginning Programming: Deltak — 117; ASI — 49; Edutronics — 5.
- Systems Analysis: Deltak — 86; ASI — 43.
- Systems Design: Deltak — 75; ASI — 40.
- Structured Analysis: Deltak — 80; ASI — 32.
- Structured Design & Programming: Deltak — 86; ASI — 32.
- Data Base Design: Deltak — 66; ASI — 28.
- On-Line Design: Deltak — 68; ASI — 28.
- Project Management: Deltak — 62; ASI — 27.
- Operator Training: Deltak — 93; ASI — 49.
- Data Entry Training: Deltak — 32; ASI — 30.

While those surveyed most likely utilize outside data training, they are not necessarily users of the vendor they named as their first choice, according to Bill Schoonmaker, Brandon's marketing representative.

If that is the case, how could a respondent rate a company he doesn't use? "One of our questions was 'Please rank the methods by which you receive information about training,' " Schoonmaker explained. "The number one pick was direct mail brochures, followed by magazines and journals, with the third choice being DP training groups that evaluate training vendors," he said.

Product Spotlight

The survey showed that "people perceive Deltak's quality as being better, while they feel that ASI's cost is better [than Deltak's]," Schoonmaker said. "They perceive Edutronics' cost is better than both the others — not much better than ASI, only one-tenth of a point — but Edutronics' quality is [perceived as] quite a bit lower."

On a cost/quality index, Edutronics came in third, but "did much better this year," Schoonmaker said. Deltak "continued to be perceived by the respondents as a hair better than ASI in the overall rating of cost and quality," he said.

Deltak improved its cost/quality rating this year, while ASI also improved slightly. "Last year we added IBM as a multimedia vendor, as well as including the standard vendors," he added, noting, "Interestingly, Edutronics displaced IBM in the No. 3 multimedia vendor position because IBM is seen as having higher costs than the other three ranking vendors." Overall, Deltak has "done better every year," Schoonmaker said.

Recent Security Breach at Stanford Has University Officials Worried

By Jeffry Beeler
CW West Coast Bureau

PALO ALTO, Calif. — An unknown telephone caller apparently bypassed the security system protecting a Stanford University Research processor and gained unauthorized access to the machine's data sometime last month.

Damage to the data appears to have been minimal, but the fact that the security breach occurred at all has left university officials concerned.

The target of the unauthorized access was a $3.4-million system belonging to Stanford's computer science department, which uses the facility to help investigate a wide range of DP-related topics, including artificial intelligence, robotics and numerical analysis.

Funding for the system's computer science research projects comes from a variety of federal agencies and nongovernment sources. Another prime source of financial support is the U.S. Defense Department's Advanced Research Projects Agency, according to the system's manager Ralph Gorin, who notified the Federal Bureau of Investigation and local police of the suspected security breach shortly after it was discovered.

News of the unauthorized access first appeared in a brief account in the San Jose, Calif., *Mercury*, which described the damage of the Stanford research system's data as "minor." The perpetrator, who has yet to be identified, apparently called the processor from an outside telephone and then circumvented the system's security safeguards, the report said.

Mum's the Word

Gorin characterized the newspaper account as "substantively true," but otherwise evaded questions about the perpetrator's possible identity and motives. He also declined to reveal exactly how the system's contents had been damaged.

"An alteration to the data clearly must have occurred," he said. "Otherwise, we would be unaware [that something was wrong]."

Gorin even refused to identify the research processor's manufacturer and model number, although he strongly implied that the machine's opeprating system was developed at Stanford rather than by a commercial vendor.

TP-200
SYNCH/ASYNCH
CONVERTER

The TP-200 Synch/Asynch Converter allows asynchronous data terminals to be used on synchronous data links. The device acts as an elastic buffer to "match" the data rate of the terminal to that of the synchronous data link.

FEATURES

- Selectable synchronous data rates from 75 bps to 19.2 kbps.
- RS-232C compatible.
- Digital data loop back.
- Available in rack-mount or stand alone configurations.
- May be used with synchronous modem links or DDS.

TeleProcessing Products, Inc.
Local Data Distribution
4565 E. Industrial St., Bldg. 7K, Simi Valley, CA 93063 • (805) 522-8149

NEW AJ 520.
THE ONLY
132-COLUMN CRT
WITH ENGLISH MENU.

Innovative design puts the AJ 520 video display terminal in a class by itself for high productivity.

For example. When you start to work, just press one key to display terminal settings. Instantly. In plain English.

And if you want to change any setting, the display shows you exactly what to do. You never have to decipher codes, refer to manuals, set switches at the back of the machine. Just press the keys indicated. Nothing could be faster, easier, more foolproof, more conducive to productivity.

Of all the 80/132-column CRT's on the market, only the AJ 520 gives you this simple English set-up menu.

Other productivity features abound on the AJ 520. Such as a 5K memory (expandable to 21K), bi-directional scrolling, character/line insert/delete, 24 programmable multi-step function keys with non-volatile memory support, and ANSI coding with VT-100 and VT-52 compatibility.

And—because a comfortable operator is a productive operator—we've built-in the most comprehensive array of comfort features available on any CRT. Including the largest characters available for exceptional screen legibility.

Call your nearest AJ regional office for details: San Jose, CA (408) 946-2900; Rosemont, IL (312) 671-7155; Hackensack, NJ (201) 488-2525. Or write Anderson Jacobson, Inc., 227 Devcon Drive, San Jose, CA 95112.

Also available through AJ subsidiaries in Markham, Ontario, Canada; Montrouge, France; Slough, Berkshire, U.K.; and Bergisch Gladbach, West Germany.

ANDERSON JACOBSON

ANOTHER AJ
INNOVATION
TO MAKE YOUR
COMPANY RUN BETTER.

If Budget Allows, Pick from Each

Which Data Training Vendor Is Right for You?

By Marguerite Zientara
CW Staff

BOSTON — Confused about which data training vendor is right for you? Perhaps a little of each one's offerings is the answer, providing you have a healthy training budget.

Some very large users — such as Exxon and AT&T — contract with two or three of the leading training vendors to take advantage of particularly appealing aspects of each vendor, a situation that is "not as unusual as it used to be," according to Roger Sullivan, director of DP training for Commercial Union Insurance Co. here.

Sullivan has contracted for 90 tape-months/mo from Deltak, Inc.; 50 tape-months/mo from ASI, Inc.; and 20 tape-months/mo from the Edutronics Group, he said. Deltak furnishes Commercial's primary technical training, Sullivan said.

"I first used Deltak as my major vendor and people [here] got used to their format," he explained.

Advanced Technology Series

In addition, Deltak has James Martin for its advanced technology series, Sullivan pointed out. "There's nothing to match him," he said. "He's probably the best person to put the advanced technologies into a language that the technician can understand."

Sullivan uses ASI courses for "some nontechnical staff, some entry-level staff and some technical courses we consider better than Deltak's." According to Sullivan, ASI is superior to Deltak in the areas of CICS and dumping technology.

Edutronics' forte is in supervisory and management techniques as opposed to technical subjects, Sullivan suggested.

"If you're a large shop, you would sometimes like access to all of the libraries, and if budget-wise you're at a point where you can feasibly do it, it's advantageous [to contract with all three vendors]," Sullivan said.

"There's no one [company] that stands out so much that you want to put all your eggs in one basket if you have the choice," he added. "At the same time, regarding the cost factor, if you put all your eggs in one basket, you get more tapes for the same amount of money available to you because of the contract-size breaks that they have."

Sullivan observed that "each one has a mix of tape modules that they do real well or that they have and somebody else doesn't have.

"For example, Edutronics has a tendency, on technical films, to use a certain proportion of graphics approaches rather than so-called 'talking heads.'"

Product Spotlight

"ASI has a lot of visual and they supplement it by text as a secondary. Deltak, on the other hand, has a heavier mix of text to video, so that just about everything that is on the video is also reinforced in the text," he added.

As for the quality of training material, "they're all professional nowadays, they've all got their own large installation where they make the films or they subcontract to other professionals," Sullivan said.

"So on that level anything you'd get today from any of the three would be good, learnable material."

Preferences for any one vendor could depend largely on how a client is planning to use the video, Sullivan noted. "For example, because Deltak furnishes a lot of textual material with its video, new people might have a higher 'comfort index' in the first weeks of a course if they can copy the text for future reference."

Such textual material "may not be available at that level at, say, ASI," he said, "where they put more emphasis on video.

"You may be getting more video for your money at ASI, but less text; and you may find that one text covers four video tapes, let's say, while at Deltak each of the video tapes has its own textbook. So that if you have a situation like us, where you've got 10 videos going at once and somebody's on Module One and somebody else wants to do Module Two, we have a separate text on each one so the two people can do their sessions concurrently," Sullivan reported.

"With ASI, the text and the videos may be overlapping so that only one person could move along at a time. If this is being done on a group basis with a tutor right there working with four or five people, it might not make much difference.

"But if you've got a larger group and you rely too much on text, you can't get beyond four or five people because too many people will read too much text in a session," he said.

Whether computer-aided instruction (CAI) is better on a mainframe, as Deltak offers it, or on microcomputers, as ASI offers it, also depends on the user, according to Sullivan.

"If the user has the memory capability on the mainline computer to load on these programs and keep them on-line for training, then it's a good way to go," he said.

"But if, as in so many companies, the mainline computer memory is pretty well taken up with the passage of information or on-line programs, they may find the only way they could do CAI would be through microcomputers that are strictly for that purpose."

Series/1

QID/1

SOFTWARE FOR:

- data base management
- applications development
- transaction processor

In N.Y. tri-State region, call:

Data Structures, Inc.
122 E. 42nd Street
New York, New York 10017
(212) 697-9305

Reiter Software Systems, Inc.
Distributed Processing Solutions
For Information Management Systems
211 Sutter Street, Suite 309
San Francisco, CA 94108
(415) 956-1575

Complete COUPON for more information:
Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip _____ Telephone _____

Honeywell Institutes Price Hikes of Up to 20%

WALTHAM, Mass. — Honeywell, Inc. has increased the rental, lease, purchase and maintenance charges by up to 20% on most of its computer equipment, software services and products.

The price hikes went into effect last week for new business and will be effective on April 1 for existing contracts or according to contractual terms, a spokeswoman said.

The increases do not affect the central systems for the DPS 6, -7 or -8 products, she added.

Reason for Hike

Reasons for the extensive price increases range from the "continued high cost of doing business" to a "soft economy," according to a Honeywell spokesman. Unfortunately, "the economy is not conducive to the kind of business Honeywell would like to carry out," he added. "Most companies can expect periodical adjustments to costs that are steadily upward."

Increased by up to 8% are the rental/lease charges for Levels 61, 62 and 64, Levels 66 and 68 central systems and selected peripherals, selected DPS 7 and -8 peripherals, selected page printing systems and certain other products not actively marketed, such as the Series 6000, Series 50 and a number of peripherals for the Series 200 and 2000 machines, the spokesman noted. The 8% price hike in rental and lease charges also affects the firm's Xerox product base for which it acquired responsibility in 1976.

Purchase prices have been raised by 4% for selected DPS 7 and -8 peripherals, selected peripherals for the Levels 66 and 68, some Series 22 and 2000 peripherals, all of the firm's magnetic ink character recognition readers and sorters and selected page printing systems.

Maintenance Charges

Monthly maintenance charges have jumped from 5% to 15% for selected DPS 7 and -8 peripherals; some Levels 61, 62 and 64 peripherals; a number of peripherals for the Levels 66 and 68 processors; and for the Series 6000 and 1640 products as well as the Models 16, 24 and 32 machines, the spokesman continued. In addition, monthly maintenance costs for selected magnetic tape units used with the DPS 7, -8 and Levels 62, 64, 66 and 68 and selected banking equipment have increased by up to 20%.

The hourly and monthly systems engineering charges for all product lines, customer service on-call hourly rates, time and material rates and selected education and training services have also been hiked by approximately 10%.

Finally, the license fees for selected system and application software products have risen by up to 15%, the spokesman pointed out.

Additional information on Honeywell's price increases, and more detailed information on exactly what products will be affected, can be obtained from the firm at 200 Smith St., Waltham, Mass. 02154.

Unix Coming For Univac 1100s

SANTA MONICA, Calif. — AT&T will make its Unix operating system available soon with selected models of Sperry Univac's 1100 series processors, according to Larry Isley, one of the communications giant's patent licensing managers.

"Unix can't operate yet on Univac equipment, but the operating system may be available by the time I get back to my office," Isley said during a Jan. 27 session of a Usenix users group association meeting here. "It's that close."

Isley declined to specify which models of the 1100 series the Univac-compatible Unix version will support.

University Tests

But he did reveal that a Unix-driven 1100 series processor is currently undergoing tests at a U.S. university, which he refused to identify but which he characterized as a "friendly user."

When it becomes commercially available with 1100 series processors, Unix will reportedly operate in conjunction with a designated release of Univac's operating system. Isley was unable at the time to identify the release.

With Univac equipment, Unix will not operate in native mode, as it does with hardware from, say, Digital Equipment Corp., Isley added.

'Well, I've Had Experience Staring at a Screen.'

THE ANN ARBOR AMBASSADOR™

IT ALL ADDS UP...

to Full Capability in a Full Page Display

The Ann Arbor Ambassador offers you a combination of features unmatched in its price range. Its **60-line display** lets you see more of your program or report; and it's selectable from the keyboard or host. There are other user-friendly features, too—**48 programmable function keys, 22 operator convenience modes, 5 graphic renditions,** protected and guarded areas, erase and edit controls, local and remote printer output, block and character transmission.

Call Ann Arbor Terminals for more information at (313) 663-8000

ANN ARBOR TERMINALS INC 6175 JACKSON ROAD • ANN ARBOR, MICHIGAN 48103 • TEL: 313-663-8000 • TWX 810-223-6033

GAO: Ease Access to Personal Wage Data Bases

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Longstanding restrictions on interagency access to federal and state data bases containing personal income information, including tax return and Social Security files, would be lifted under a recent proposal to Congress.

The General Accounting Office (GAO), the Congressional investigation and auditing agency, said last month that lack of reliable welfare recipient income data will lead to payments to ineligible recipients and to overpayments totaling more than $1 billion in fiscal 1982.

The need to staunch the flow of improper benefit payments in the 58 assistance programs funded by the federal government is a "compelling" societal need, which "outweighs individual privacy concerns" that have limited access to the income data, the GAO said.

Wage and unearned income information is kept by a number of state and federal agencies, but in many cases is not available to administrators of assistance programs. The restrictions result from various privacy statutes and in some cases from the absence of laws requiring agencies to gather and share the data.

The GAO pointed out that Social Security data is available to state food stamp administrators, but not to agencies running dozens of other federally financed programs. Likewise, state unemployment agencies are not required by law to collect quarterly individual wage data from employers and only 38 states now do so.

Several Suggestions

The report offered several legislative recommendations to facilitate access to automated wage data bases:

• All states should be required to collect quarterly income data for use in unemployment insurance programs and in assistance programs supported by the federal government.

• Regulations that limit sharing of state wage data to the food stamp program alone should be lifted.

• Internal Revenue Service (IRS) files on individual wage and unearned income — such as dividend and interest payments — should be disclosed to federal, state and local agencies running federally backed programs.

Cross-Checking Aid

The GAO also recommended that Congress require that Social Security numbers be obtained from applicants and recipients of all federally funded programs to make it easier to cross-check various government data bases to determine eligibility.

Use of Social Security numbers as personal identifiers has long been a concern of privacy advocates, as has access to tax return information and increased sharing of agency held personal data, the GAO noted.

The report, however, suggested that administrative efficiency and economy are more important than personal privacy: "Because of the substantial monetary and programmatic benefits that are involved, we believe that existing legislative or administrative constraints that hinder efficient and effective methods of income and asset verification should be removed."

The GAO said Congress and state governments have already loosened restraints on data sharing for some purposes, including food stamp and welfare administration, and that the White House is sponsoring a large-scale program of computer matching of various federal and state files to police assistance programs.

Those initiatives and the proposal to make data sharing routine for welfare agencies is justified, GAO said, because savings in reduced improper payments "would greatly exceed the related implementation costs."

The report also pointed out that the Office of Personnel Management (OPM) has in the past released federal employee wage data in a manner OPM claimed to be consistent with the 1974 Privacy Act.

For example, although there is evidence to the contrary, GAO said that the 1979 Project Match, which compared OPM files to assistance program rolls to find improper welfare, Medicaid and food stamp payments, "paid for itself several times over."

Congress has already taken up some of the actions recommended by GAO; one item, easing access to IRS data, has been under consideration for some time.

COMPUTER OPERATIONS

PLANNING EDP EXPANSION? New Site? Modernization of Existing Facilities?

D.P. Facilities Engineers and Designers have 20 plus years of experience to move your facility into the next generation.

- Advance Techniques in Architectural, Engineering and Interior Design.
- Construction Methods & Materials
- Environmental Air-Conditioning
- Uninterruptible Power & Voltage Stabilization
- Fire Detection & Suppression
- Total Security

TIME A FACTOR? Call our D/C expedite group today — for a guaranteed completion date.

(212) 674-8600

D.P. FACILITIES INC., NATIONAL
Div. F.C.I. Facilities Construction, Inc.
250 Park Ave. South, N.Y. 10003

IOF/TSO
Interactive Output Facility

A Comprehensive Approach to Reviewing the Results of JES2 Batch Jobs Under TSO

- Super-Fast Response Even for Large Jobs
- Return Code Summary for Each Job
- Menu Selection of Sysout Data Sets by Step Name and DD Name
- Split-Screen Operation Under IBM's SPF
- SPF-Compatible Full-Screen Browse
- Easy Alteration of Forms, Copies, Etc. After Job Has Run
- Support for All TSO Terminal Types
- Support for All versions of JES2

P.O. Box 12752
Research Triangle Park
North Carolina 27709

Triangle Systems, Inc.
919/929-0390

Bring it all together

With our new TC-5 Terminal Concentrator
The advanced, easy to use statistical multiplexer for up to 16 asynchronous terminals, over a single telephone line

- STATISTICAL MULTIPLEXING — Efficiencies to 400%
- COMPLETELY TRANSPARENT — No hardware or software changes
- ENHANCED STANDARD FEATURES — Fully supports dial-up modems, Break, Autobaud, ECHOPLEX, and auto-restart
- EXCEPTIONAL FLEXIBILITY — Configure each port separately to ANY popular baud rate, character format, flow control, etc.- while other ports are active!
- PROVEN RELIABILITY — TC-5s are in use world-wide
- EXCELLENT SAVINGS — The cost-effective solution to your communications needs
- ELIMINATES ERRORS — Fully automatic error correction
- COMPREHENSIVE DIAGNOSTICS — Automatic self-tests, modem loop-back, and built-in error counters
- FAST, FRIENDLY PROGRAMMING — Program all parameters from either unit, using only the English display and three front-panel buttons-ALL in just seconds!
- BUILT-IN SYSTEM MONITORS — Real-time signal and data displays

For further information and the sales office for your area Call toll-free (800) 235-6936 or in Calif. (805) 964-9852

ComDesign
ComDesign, Inc.
751 South Kellogg Avenue
Goleta, California 93117

system/34

users all over the world agree... the EZ-LIST RPG Program Generator is indispensable

NOW WITH ON-LINE CAPABILITY!

EZ-LIST is a unique, easy to use inquiry tool that writes RPG II programs through your responses to a series of simple English prompts.

Programmers are using EZ-LIST to reduce their coding backlog and get their requests out faster. And users like it because it's simple and gets them the information they need when they need it; and it costs only $395.

Act Now! Call or write for complete information

Productive Software Systems, Inc.
1301 Franklin Avenue, Garden City, N.Y. 11530
(516) 742-7217

Needs Strong Customer Base

Pacific Seen Lacking Resources for Videotext

By Hal Glatzer
Special to CW‡

HONOLULU — Videotext is a hot topic in Europe and North America, but it may be slow to catch on in Asia, the Pacific basin and Latin America because it requires both a modern telecommunications network and a strong customer base.

That was the consensus at the 1982 Pacific Telecommunications Conference, at which 310 participants from 25 countries discussed not only the technical but also the social and economic climates affecting the information industries.

One attendee, George Van Valkenburg, is an irreverent American communications consultant living in New Zealand. To him, "the Prestels, viewdatas and videotext of today are classic comics. Remember *Classic Comics?*" he asked. "The world's greatest listerature, public domain of course, in a garishly colored 15-cent comic book. Timeless and deathless prose was chopped to fit in comic strip balloons. What is on a Prestel frame? About 150 carefully edited and passionless words and graphics that look like 'connect the dots' puzzles.

"For classified ads they may be OK, but narrowband systems will not serve the persuasive purposes that television does," he said. Van Valkenburg favors using images of broadcast TV quality and fuller development of the ability to browse through unfamiliar material — a wideband electronic publishing alternative.

Even supporters of modern videotext admit that it has been technology-driven. "There is a tendency for all of us to get involved with it and then go out and see if there's anything there," according to Hilary Thomas, senior consultant with CSP International, London, who has researched the marketplace.

Attractions for Pacific

Thomas maintained that videotext has four attractions for the Pacific: It is user-friendly, easy to maintain, has comparatively low costs to both consumers and providers of information and can be transmitted by various media, including broadcast, telephone wires and satellites.

"In the Pacific, we should start small, with less-sophisticated services, where needs can be identified," she said. "We should be looking for applications where videotext is the most appropriate medium. A lot of work has gone into developing the technology, but not much has yet gone into the product, especially into marketing appropriate products that meet the needs of target audiences."

Michael J. Burgess of British Telecom International pointed out that videotext is under development in Australia, Singapore and Hong Kong. What he calls "our Commonwealth cousins" enjoy "a heavy traffic stream" of data communications that British Telecom carries along packet-switched networks that are being converted to all-digital systems. But the technical issues are subordinate to political and economic ones. "Ultimately," Burgess said, "implementation of videotext will depend on local policies, set by local administrations."

The Japanese are creating a "household information system," according to Shigenori Horiguchi, director of the International Affairs Division of the government's Ministry of Posts and Telecommunications. The Captain System there offers financial services as well as information. Part of its appeal, Horiguchi said, is that Kanji and syllabary characters can be displayed graphically.

"Of course, we must take the evil with the good in telecommunications. The farther and wider the information society advances, the more terrible the inconveniences or the worse effects that result from not adjusting to society or misapplication may arise."

Roy Bright has been an early and tireless advocate of videotext systems, working first for Britain's Prestel and now for France's Intelmatique. "I don't envisage a rapid growth for residential videotext in the Pacific," he said, "but the applications developed by government or business environments may make it available in public or private institutions there."

Intelmatique's large computers are linked to data bases through a new

(Continued on Page 18)

Photo by H. Glatzer

Roy Bright

DATA PROCESSING vs. PERSONNEL.

AT MONTANA POWER, INFO HELPS BREAK THE APPLICATIONS LOGJAM AND BRINGS PROGRAMMING POWER TO THE PEOPLE.

At Montana's largest utility, the Montana Power Company, the productivity of the non-technical people was sagging while the backlog of programmer application assignments was staggering.

The final solution…a system that allowed non-DP personnel to do their own application programs.

The obvious need…a simple, highly productive application development tool: INFO, from Henco.

Today over 150 non-technical administrative people are doing nearly 70 different applications themselves. With INFO.

THE WAY IT WAS.

"Two years ago, we just didn't have sufficient technical staff to keep up with the applications needs. Everything was suffering. Customer billing. Load research. Payroll. Personnel files. Not to mention employee morale.

So we set up a structure to turn it all around. INFO on our IBM 3031 computer and a User Support Group. The purpose was simple: Teach administrative people how to write their own programs. It worked. I project that we may soon have 200 people using INFO. They feel great about it. And our technical staff is happy because they can concentrate on the activities that really require their expertise."

—Jeffery Dobb, Sr., User Support Analyst.

INFO IMPROVES THE PERSONNEL DEPARTMENT PRODUCTIVITY TOO.

Actually, the first installation of INFO at Montana Power Company—and still the largest—is in the Personnel Department.

"It all comes down to cost justification. Because of INFO, we are able to offer services that we weren't capable of doing previously. Our mountain of reports is prepared in a timely manner with up-to-the-minute accuracy. For an example, when a new job opening occurs or a department is reorganized, we can review educational and work experience backgrounds of all employees—over 2500—in half an hour. Not two months. And the applications work is done by our *own* personnel. This has resulted in more challenging work and improved morale."

—Catherine Ellerton, Supervisor, Personnel Records and Services, Montana Power Company.

Montana Power Company brings power to the people of Montana and uses INFO to bring computer power to their employees.

Do what Montana Power and more than 600 other companies are doing to help make non-technical personnel more productive and responsive. Install INFO, the powerful application development tool/Relational DBMS system from Henco, Inc. for Prime, DEC VAX, Honeywell DPS 6, IBM 4300, 303X and 370 systems (with VM/CMS), or Harris computers. Call or write HENCO, Inc.

HENCO

For greater productivity.

35 Walnut St., Wellesley, MA 02181, 617-237-4156, TWX 710-383-7529.

Pacific Seen Lacking Resources for Videotext

(Continued from Page 17)

packet-switched network, and to users by a newly upgraded telephone network. One way to bring down costs in developing countries, Bright said, is to bypass long-distance lines. "Why should we use them? You could afford to have a local, bulk-loaded data base, with — for example — travel or airline schedule data stored and updated nearer to the user."

The trade-off for lower telecommunications costs is higher local data processing costs. According to Joseph DeBlasi, director of standards for IBM, Rubik's Cube can be used to explain the trade-offs and the role that gateways will play in introducing data communications systems, such as videotext, to developing countries.

"The faces of the cube are like the operational elements of an information system," he said. "While they can work independently, they are linked by a need to transfer information among themselves and can be rotated along three axes: processing, communication and presentation.

"As standards are developed, gateways are going to be extremely important because they permit different systems to interface with each other without giving up the individual capabilities of each.

"We may never have standards for videotext," DeBlasi said.

Even if the hardware problems are ironed out, software and content are far from standardized. Rui Lopes, a Sunnyvale, Calif., consultant, is skeptical. "What," he wonders, "can videotext offer to the consumer that closed-circuit TV, cable TV and time-shared data bases cannot provide?"

Bright doubts that videotext will be in every home within a few years, but only because people are taking a narrow view of it.

"If people see it only as a kind of radio or TV, or as a system of classified ads for a house to buy, they will think of it as useless and not see the range of advantages: low cost penetration into the home, ease of use by non-professionals, subsidized placement of directory services — such as the French experiment with terminals to replace telephone books — and the potential for advertising to pay many of the usage charges.

"Of course you can get all these services in the U.S. or Europe today, but only if they have a lot of money to spend on a lot of different services," Bright said.

"Costs will fall as hobby applications for it grow," Judy Johnston, a Canadian studying Japanese management theory in Hawaii, said. Her own experience is that, "when I'm not working on my [time-share] terminal, I use it for games."

Popular as Games

That is very common, according to Thomas. "We found that the most popular first use of Prestel systems was for playing games — even though most of the terminals were located on business premises.

"People don't think of lumping the cost of information-gathering in with their costs of doing business," she said. "Our surveys show that even if it takes several telephone calls to find a piece of information, people may very well say it was free. I don't think consumers are willing to pay for information — only for services.

"It is in the business community, rather than among consumers at home, that videotext services will first realize their commercial potential," Thomas said.

"A small data base of 20 to 50 selected frames of information relevant to a specific user, which is updated daily, is more likely to attract usage than large quantities of general information. The typical business user in the Pacific will be a senior executive, who has no other computer terminal on his desk."

Will videotext always be the province of the largest users? Thomas said that Owl Computers in Britain has developed a videotext editing system using Apple Computer, Inc. Apple II microcomputers for editing Prestel (Appletel) that costs the end user only $1,200; a similar project is underway in Canada for Telidon.

But for small nations — particularly those that are islands in the Pacific basin — almost every videotext system is too expensive. The problem of low-cost access to data bases, and interactive data communication in general, is the concern of Jim Harpstrite, an education professor at the University of Hawaii.

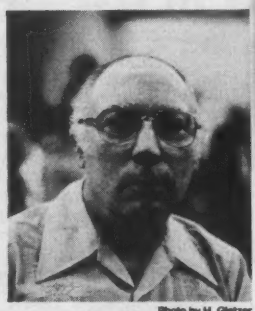


Photo by H. Glatzer

Rui Lopes

Glatzer is a free-lance journalist based in Seattle.

IMAGINE WHAT COULD HAPPEN IF THE BEST SOFTWARE ENGINEERS IN AMERICA STUDIED TOGETHER UNDER ONE ROOF.

When professional software engineers work together, everyone benefits.

We know, because we're proving it.

At the Wang Institute of Graduate Studies, our students work together to pursue an unprecedented educational opportunity: earning a Master of Software Engineering (M.S.E.) at a graduate school which combines the challenge of academics with the highest standards of industrial practice.

Moreover, students at the Institute master advanced software technology and methodology as well as technical management.

And when professional software engineers gain this kind of experience, everyone–their colleagues, their supervisors, their companies and their industry–benefits.

Find out why some of the best software engineers in America are taking advantage of the best software engineering program in America.

Applications from full- and part-time candidates are currently being accepted for September, 1982. Graduate assistantships are available for qualified full-time students.

For more information, call Cynthia Johnson, Corporate Liaison, or mail the request below.

WANG INSTITUTE OF GRADUATE STUDIES

Wang Institute of Graduate Studies
Tyng Road
Tyngsboro, Massachusetts 01879

Please send me additional information about the Wang Institute of Graduate Studies.

NAME_____

ADDRESS_____

COMPANY_____ TEL._____

ADDRESS_____

CDO2082

We're talking BASIC here.

BASIC convenience—each of our 3 Sheraton-Tara Hotels is handy to the computer/electronic complexes along Routes 128 and 495. And easily accessible to Boston and Logan Airport. Each features classic Tara Elegance—oversized guest rooms, superb dining, inviting lounges and nightly entertainment. Full health club facilities. And excellent facilities and service for meetings of all sizes.

Making your business travels a pleasure . . . basically, that's what we're all about.

Sheraton-Tara Hotels
THE FLATLEY COMPANY

BRAINTREE, MASS. (617) 848-0600
Route 128 at Exit 6B

FRAMINGHAM, MASS. (617) 879-7200
Mass. Pike at Exit 12, Rte. 9 West

NASHUA, N.H. (603) 888-9970
Route 3 to Exit 1 to Tara Blvd.

OR CALL OUR
TOLL-FREE NUMBER:
800-325-3535

A Multi-Task Data Entry System

Write on it...Calculate on it...Sketch on it...
And Keep the Hard Copy Original

The Image Data Tablet System is a remarkably versatile data entry system that allows users to input data at its very source without costly keyboarding.

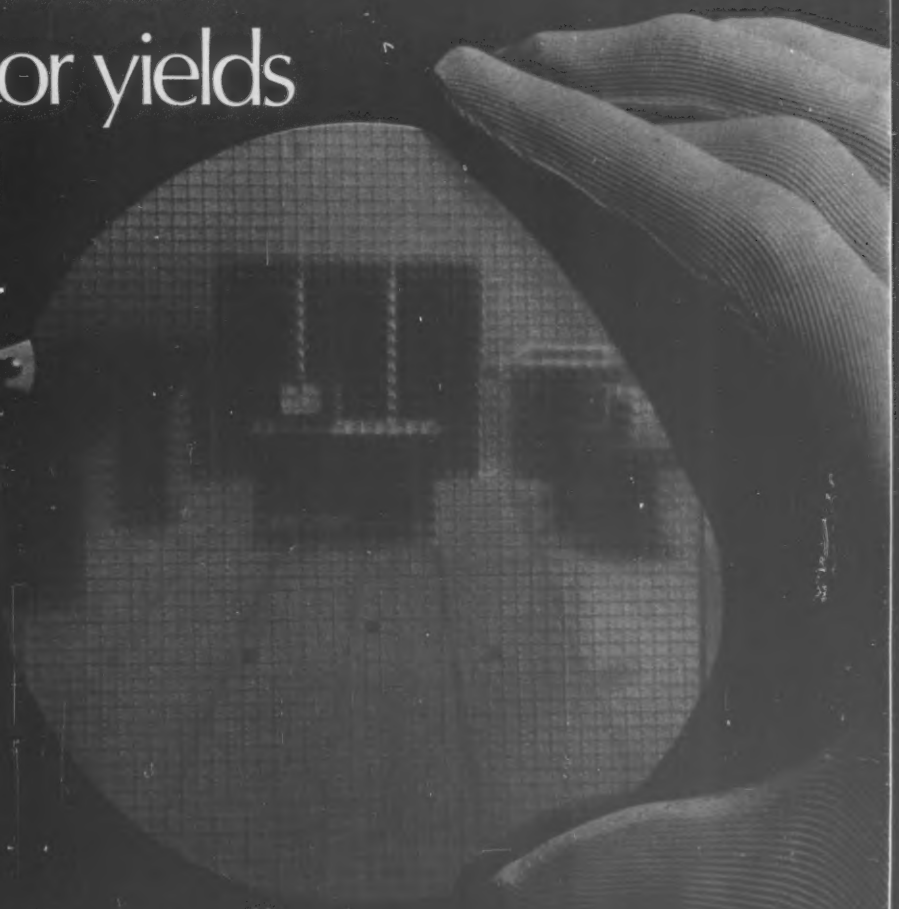
The system can recognize hand print, accept drawings or sketches and input data and mathematical calculations through a character and calculator touch table.

An Image Data Tablet System includes:
- Handprint Recognition
- Mathematical Calculation
- Graphics Mode for Design Work
- Touch Table Input
- Special Function Keys

TOTAL TECHNICAL SERVICES, INC.
Sales Office for the Avaldata Multi-Function Terminal
341 Cobalt Way • Sunnyvale, California 94086 • (408) 733-5211

For More Information Call TOLL FREE: 800-321-3156

"Motorola increased semiconductor yields and reduced wafer production costs with a global network of **Tandem NonStop™ Systems.**"



Dick Solar, Manager Strategic Manufacturing Applications
Motorola Inc. Semiconductor Products Sector

"With a network of Tandem NonStop Systems around the world, our common manufacturing system provides on-line collection of process activity and pinpoints areas affecting yields and cycle times wherever they occur.

The Tandem Systems provide direct and instant feedback on work-in-process and enable us to run our plants with an efficiency which was never before possible.

"The network is designed to provide immediate, real time information from our manufacturing operations in Kuala Lumpur, the Philippines, Korea, and Scotland. Here in Arizona, management can analyze and identify process variables in time to take corrective action.

The result is a dramatic improvement in cost controls, in scheduling and capacity planning. Plus reduced inventory requirements."

The NonStop System. Information from every one of your locations at your fingertips, on a continual basis, without fail. To help you run your business better.

The NonStop Company. Tandem. Fully supported by a worldwide sales, training, service and manufacturing organization.

For information on how a Tandem NonStop System can improve your productivity or your P/L statement, call your local sales office or Tandem Computers Incorporated, 19333 Vallco Parkway, Cupertino, California 95014, U.S.A. Toll Free 800-538-3114 or (408) 725-6000 in California.

TANDEM
NonStop Computing Systems

©1981 Tandem Computers Incorporated

'Many Services Prefer Cables'

Satellites Replacing Need for Cables Myth: Exec

By Hal Glatzer
Special to CW‡

One of the world's leading authorities on submarine cables said, "When I see a new satellite launched, I rejoice — there's a scarce resource being used up!"

Bogumil Dawidzuik is manager of market development and product planning for Standard Telephones and Cables Ltd., of Great Britain. To him, any prediction that communications satellites will replace the need for cables is simply not based on the facts, he told delegates to the 1982 Pacific Telecommunications Conference.

"Many services prefer cables," he said. "From a security standpoint, signals are enclosed in a structure that does not radiate or broadcast electromagnetic energy; cable-borne messages cannot be picked up by unauthorized people, as satellite transmissions can."

Cables also represent the shortest path that data can travel between two points. Relaying a signal by satellite means a near-50,000-mile round trip: even at the speed of light, that takes a quarter of a second — enough time to require special equipment at both ends to ensure synchronization and accuracy.

So don't count cables out of any long-distance service yet. Not while Australia, New Zealand, Fiji, Canada and the U.S. are planning a major new trans-Pacific cable; not while integrated packet- and circuit-switching technology is making existing cables more efficient; and not while fiber optic cables are poking their way into the water.

According to Martin Fournier and Nirmal Pal, of Teleglobe Canada, the Anzcan (an acronym for Australia, New Zealand and Canada) Project will connect the north and south Pacific countries. It will be placed in service in late 1983, in part to replace the 1960's-vintage Commonwealth Transpacific (Compac) cable system that is nearing the end of its design life. Compac's 82 circuits (3 kHz bandwidth) have been increased by multiplexing technology; taking advantage of time zone advantages, it now has the equivalent of 333 voice circuits.

Comparing Anzcan

By comparison, Anzcan will have — from its inception — the equivalent of 480 voice circuits along its shortest link (New Zealand to Norfolk Island) and a total of 1,380 circuits connecting Australia with Canada; those will be 4 kHz circuits, which will considerably improve data traffic.

Standard Telephones and Cables is the major contractor. "For wideband data traffic," Dawidzuik admitted, "cables are expensive right now, because analog bandwidth is expensive. In the Anzcan project, 1,033 repeaters and 65 equalizers will be placed at the bottom of the Pacific Ocean. Five sets of terminal equipment will provide the necessary power supply, signal amplification, equalization and multiplexing."

Mario Gerla, a member of UCLA's computer science department, says that the two switching technologies — packet and circuit — have traditionally been viewed as opposed to one another. "We find surprising similarities of approaches in the most recent implementations of these two schemes, which leads us to predict that a combined packet-and circuit-switching scheme will be the emerging technology of the '80s."

Circuit-switching's advantages are its wide geographical availability (essentially, through any telephone), and its protocol transparency, in that no user codes or control characters need be recognized by the network. "Unfortunately, circuit switching gives poor bandwidth utilization for most computer data transfers," Gerla said.

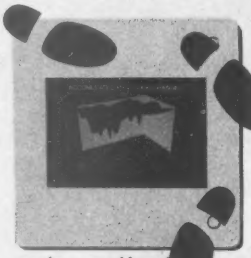
Glatzer is a free-lance journalist based in Seattle.

The critical path to choosing a graphics software system.

Finding the most reliable graphics software system can be a tough job for a data processing manager. ISSCO makes that job easier, by giving you the graphics software system that produces what it promises.

ISSCO offers the support and interfacing that take the weight off your shoulders. ISSCO will install on-site on all your graphic devices. Then, ISSCO will train your staff. And we'll keep on offering you close-at-hand service through any of our offices worldwide.

Our flexible products, DISSPLA® and TELL-A-GRAF®, created the standard in data representation graphics. Our industry-leading software assures you of graphic arts quality. Using simple commands, both your computer specialists and your clerical staff can transform masses of information into presentation-perfect charts



graphs . . . quickly and

ISSCO is both mach and device-independent. ISSCO products are compatible with IBM, DEC, CDC, Cray, Burroughs, Univac, Prime, Honeywell, and Perkin-Elmer. You never have to worry again about pat-ibility of so with ur hardware or graphic devices.

Choosing the right graphics software system is a critical decision because it has such long-range implications. So we'll make it easier for you. By offering you the software your users deserve . . . and by helping your department run as smoothly, productively and profitably as possible. Call or write: ISSCO, 4186 Sorrento Valley Blvd., San Diego, CA 92121 U.S.A. (714) 452-0170; ISSCO Deutschland, 49 261 407989; and ISSCO U.K. Ltd., 624 66 27.

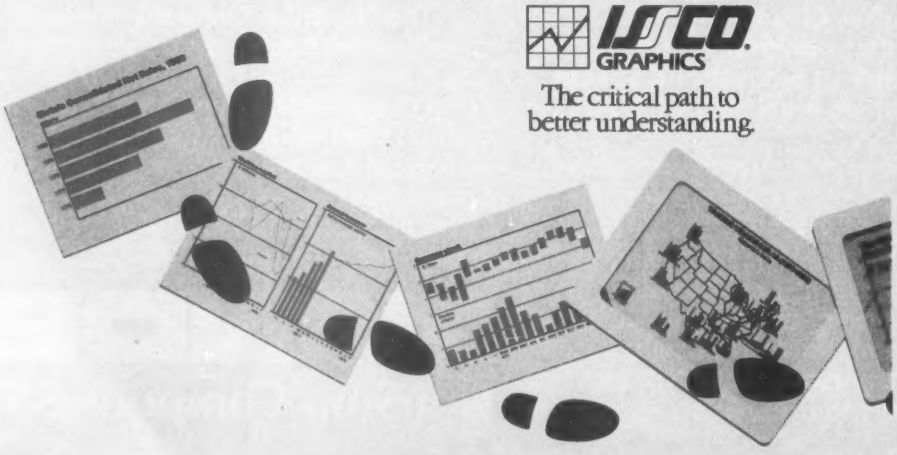
The Path to "Choosing the Right Chart."

Only ISSCO can offer you the informative book on choosing the right chart. Order it today for only $8.50.

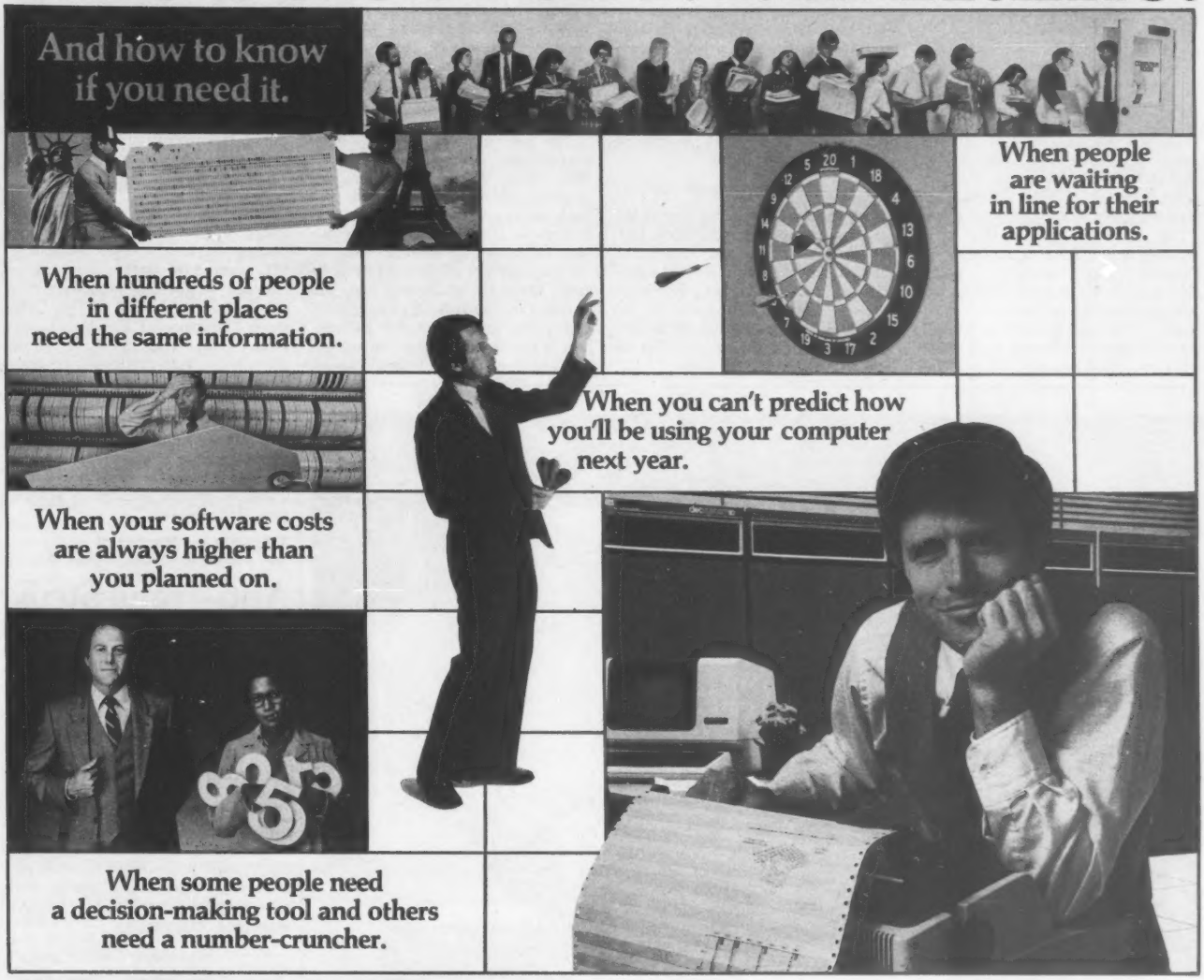
Name _____
Address _____
City _____
State _____ Zip _____
Phone _____
☐ Send me the book and more information about ISSCO, please.
☐ No book, thanks. Just more information about ISSCO.

ISSCO GRAPHICS

The critical path to better understanding.



The Personal Mainframe.


And how to know if you need it.
When people are waiting in line for their applications.
When hundreds of people in different places need the same information.
When you can't predict how you'll be using your computer next year.
When your software costs are always higher than you planned on.
When some people need a decision-making tool and others need a number-cruncher.

You can solve a lot of problems with a DECsystem-10 or DECSYSTEM-20, The Personal Mainframe™ computers from Digital.

Everyone needs to use the computer? With The Personal Mainframe, up to 512 users can work interactively at their own terminals.

Lots of different applications? The Personal Mainframe does everything from computer-aided design and scientific research to marketing reports and payroll.

Worried about software costs? People who use it say The Personal Mainframe is the easiest system they've ever worked with. The DBMS complies with CODASYL specifications. All the languages, from COBOL to FORTRAN, are highly interactive. And since applications are easy to maintain, your highly paid programmers can spend their time developing new software.

The Personal Mainframe can help your 5-year computer plan, too. It's easy to expand or upgrade without losing any software. You can also extend it to a communications network with other Personal Mainframes, smaller computers from Digital, even computers from other vendors.

We'll help you choose The Personal Mainframe that's right for you, whether you're in engineering, research, manufacturing, business, government, or education.

Send for our brochure, "The Personal Mainframe and how to know if you need it." Or call 617-467-6434.

You just might discover the answer to all your computer problems.

Digital Equipment Corporation, 201 Forest St., Marlboro, MA 01752. European Headquarters: 12 Av. des Morgines, CH-1213 Petit-Lancy/Geneva. In Canada: Digital Equipment of Canada, Ltd.

digital

We change the way people work.

Computer Saves Pa. $12 Million in Medicaid

By Jim Bartimo
CW Staff

HARRISBURG, Pa. — Savings in excess of $12 million were realized by Pennsylvania's Department of Welfare when a computer took over the payment of federal Medicaid costs for the Office of Medical Assistance, according to Gerald Radke, deputy welfare secretary. The system, installed in July of 1980, has paid for itself in savings, Radke said.

The savings reportedly come through a reduction in duplicate, erroneous and fraudulent health claims from the state's 29,000 doctors who produce 22 million invoices annually. The system services 1.1 million Medicaid recipients, Radke said.

Before the office switched to a Univac 1100/84 mainframe, doctor's bills were paid manually. This made it impossible to efficiently catch duplicates and other types of billing errors, Radke noted. It also made it impossible to find recipients who were overusing the Medicaid system with frequent visits to the doctor, he explained.

Billing Problems

With Medicaid, patients receive the services of a doctor who then bills the Office of Medical Assistance. This process allows for several possibilities. The doctor may overbill or send bills more than once, the patient may not be eligible for certain services or the patient may not be qualified to receive Medicaid.

These and other problems were reportedly too cumbersome to check manually. However, the computer makes it possible to quickly compare rate, patient and doctor lists to ensure that a payment should be made, Radke said.

"The federal government has been encouraging automated payments," Radke said. "As we had a change of administrations here that made it a high priority, the federal administration made it a requirement. So we were all geared up to do it."

Ninety percent of the start-up costs and 75% of the operating costs are handled by the federal government, Radke said. The system costs $42 million to maintain each year, he added.

In addition to the Univac 1100/84, the office has a number of Model 8470 disk drives from the same vendor. The environment includes a Univac OS 1100 operating system and Univac's data base management system DMS 1100. "We selected Univac for its ability to grow," Robert Kelly, director of operations for the Office of Medical Assistance, said.

In-House Control

"Most states do everything in-house or give it all to a claims processing agency," Kelly explained. "We wanted the staff under our control, but we gave the labor-intensive efforts like data entry to The Computer Company of Richmond, Va., which keypunches in all the claims. We use the tapes on our own computer."

In this way, Kelly's staff can check for duplication and fradulent claims without becoming bogged down in tedious work. The savings allowed the department to raise reimbursements to doctors from $8 to $12 per visit, Radke noted.

USDA Ponders Anti-Fraud Steps

WASHINGTON, D.C. — Frustrated by the often futile effort to detect and prosecute food stamp cheaters, the U.S. Department of Agriculture (USDA) is now looking at several electronic systems including credit cards with magnetic strips and embedded microprocessors to provide fraud-proof food stamp transactions.

By eliminating the need to issue easily counterfeitable and negotiable authorization cards and food stamps, USDA said it hopes to prevent the widespread fraud and waste that have plagued the multibillion-dollar assistance program.

'Intelligent Card'

One system under consideration uses the so-called "intelligent card," a credit card developed in France by Honeywell Bull. When entered into a transaction terminal at grocery stores, the card's embedded chip indicates the amount of food stamp account drawdown to the program recipient and merchant and simultaneously updates welfare office records.

In Pennslyvania and New York City, the department is issuing cards with magnetic strips as authorization documents. Besides saving the cost of printing and issuing authorization forms and food stamps, USDA hopes the systems will "prevent the potential for abuse in the front end of the assistance process," the department said.

"What is needed is alternative public assistance issuance and delivery systems that eliminate the potential for fraud and abuse in the first place," according to Assistant Agriculture Secretary Mary C. Jarratt. "Once negotiable documents are removed from the program, the possibility for illegal trafficking in food stamps or other assistance programs is eliminated," she said.

The department said it will eventually select several alternative systems for pilot testing.

A few months ago Selanar announced that with just 4.4 minutes and our graphics board, you could turn your DEC™ VT100, 103, or 132 into a fully operational graphics terminal.

We sold a lot of boards. We still sell a lot of graphics boards. The reason? We make the only board on the market that has fast installation Tektronix® emulation, and a list of features that other graphics board manufacturers only dream about. And now you can have graphics capability on your new DEC™ VT105, making the Selanar graphics board a very versatile investment.

Selanar's multi-talented PL100 software allows you to create excellent graphics displays. Or use your Tektronix® compatible packages like PLOT 10™, DISSPLA®, TELL-A-GRAF®, and DI3000®, or any other package with 4010 output mode. And the Selanar board does this all without changing any of the original features.

Independent graphics mode, cross hair cursor for more accurate plotting, selective erase, alphanumerics overlay, light pen, and multiple character sizes make the Selanar graphics board the quality investment leader in versatile graphics options.

Let us show you how to get the most from your DEC™ terminals. Call us at (408) 727-2811.

Selanar Graphics An Investment In Versatility

For DEC VT100, 103, 105 & 132 CRT Terminals.

SELANAR CORPORATION
437-A Aldo Avenue, Santa Clara, CA 95050

Tektronix® and Plot 10™ are registered trademarks of Tektronix™, Inc. ISSCO DISSPLA® and Tell-A-Graf® are registered trademarks of Integrated Software Systems Corporation. DEC™ and VT100, 103, 105 and 132 are registered trademarks of Digital Equipment Corporation. Image on terminal is compliments of ISD Computer Services.

System Passes With Flying Colors, Meets University's Growing Needs

Programmer checks manual in MSU computer room.

Special to CW

BOZEMAN, Mont. — For the past 15 years, Montana State University (MSU) has been involved in a variety of medium- to large-scale computing. But until two years ago most of that processing revolved around an old, not so state-of-the-art Xerox Corp. mainframe that ran under several operating systems.

The Xerox Sigma 7 computer, purchased by MSU in late 1960, had about 512K bytes of main memory and 400M bytes of disk storage — definitely not a large system by today's standards, according to Bill Moore, MSU's director of computing services.

Despite the computer's comparative shortcomings, it was used by MSU to develop a variety of applications packages ranging from interactive personnel and alumni data base systems to a football scouting program and a number of system projects. In fact, one of these projects included using a Honeywell, Inc. Level 6 minicomputer as a front-end communications processor for the Sigma machine and software that simulated online user loads to test and evaluate other computer systems, Moore explained.

More Power Needed

As time progressed, however, MSU realized the need for more computer power and flexibility to meet the continuing needs of the university's 11,000 students, 800 faculty and 1,200 staff. And MSU wanted a central system to satisfy both the administrative and academic sides of the school, Moore said. So in 1978 the university began the process of seeking a replacement for the Sigma 7.

About a year later, after months of evaluating many vendors, MSU selected Honeywell's then recently announced CP-6 system as the most logical replacement for the Xerox Sigma 7 CP-V.

"It was clear from the outset that users were not about to move backward, especially as the operating system was concerned," Moore continued. And "CP-V has proven itself many times over as an extremely user-oriented, efficient system."

Actually, the school's decision to go with Honeywell equipment was not surprising. Honeywell assumed responsibility for Xerox computer users in 1976 and is committed to providing migration paths for that system's users. In fact, the firm developed CP-6 at the company's Los Angeles Development Center as part of that commitment, a Honeywell spokesman stated.

The CP-6 system operating on Honeywell Level 66/DPS/C3 hardware reportedly provides a multifold increase in memory and disk, both of which are scarce resources on the Sigma 7, Moore explained. The result is the ability to run much larger programs and increase throughput and response time for the school's terminal users.

MSU's CP-6 system now has 16M bytes of main memory and more than 3G bytes of disk storage.

As an added feature, the CP-6 has increased the availability of vendor-supplied applications software.

SCIENCE/SCOPE

Application of magnetic fields during the growth of crystals from molten sources may control irregularities in single-crystal semiconductor materials. In experiments at Hughes, a magnetic field was applied for the first time to the float-zone growth of gallium-doped silicon crystals. The magnetic field substantially reduced the amplitudes of striations due to crystal rotation and thermal convection. It also made for more orderly rotational striations.

An advanced electron-beam lithography system is being developed at Hughes to make Very High Speed Integrated Circuits (VHSIC), the "super chips" that will give military systems a tenfold increase in data processing capability. The high-speed lithography system will focus beams of electrons to "write" circuit patterns with submicron dimensions. These patterns will be converted into transistors and interconnects smaller than any now in production. VHSIC chips will be faster, more reliable, use less power, and have more memory than ordinary chips. They will be used in the air, at sea, on the ground, and in space.

Better windows for infrared sensors may be forthcoming after more research into a new fabrication process. Hughes scientists have made discs of fluorohafnate and fluorozirconate glasses by pressing glass pieces under low pressure (1024 psi) and high temperature (340°C). The process offers two important benefits. First, infrared glass compositions, which tend to crystallize when large batches are cooled from the melt, can now be formed into large optical elements up to 30 centimeters in diameter. Second, because the discs are cast into their final form, they have neither surface strains due to grinding nor polishing impurities, both of which reduce infrared transparency.

An ultramodern facility spanning 1.75 million square feet will be the showcase where outstanding Hughes engineering will combine with advanced manufacturing techniques and production processes. Our complex is nearly completed, so we're looking for experienced and graduating engineers to work on such programs as: infrared thermal imaging systems, laser rangefinders and designators, and missile launching and guidance systems. Send your resume to Dan O'Daly, Hughes Electro-Optical and Data Systems Manufacturing, Professional Employment, P.O. Box 924, Dept. SE, El Segundo, CA 90245. Equal opportunity employer.

Solar-powered ion propulsion will be demonstrated on a spacecraft in the near future. Compared to conventional chemical propulsion, ion propulsion saves weight and is better for spacecraft control and interplanetary travel. It generates small but exact thrust for long durations. Hughes has developed a mercury ion thruster system having a specific impulse of 2500 seconds. It is being incorporated for NASA into a prototype Ion Auxiliary Propulsion System (IAPS) to be launched from the Space Shuttle on the U.S. Air Force P80-1 spacecraft. The flight package also includes diagnostic sensors and data processing to determine potential electromagnetic and contamination effects on the spacecraft.

Creating a new world with electronics

HUGHES

HUGHES AIRCRAFT COMPANY
CULVER CITY, CALIFORNIA 90230

(213) 670-1515 EXTENSION 5964

Reduces Turnaround Time

Language System Solves Translation Dilemma

By Marguerite Zientara
CW Staff

SAN DIEGO — Reduced turnaround times and more consistent translations have resulted from the use of a computer-assisted language translation system for the product manuals of a maker of industrial gas turbines.

Solar Turbines, Inc., a subsidiary of Caterpillar Tractor Co., has found that product expansion to foreign countries is often held up until technical and sales information can be translated into the language of the potential buyers and technicians.

A few years ago "we were faced with a real translation dilemma," recalled Charles Koch, chief of sales literature and translations. "Our manual typically costs $10,000 to $25,000 to translate and those costs were rising each year.

"One of our manuals could tie up a translator for months at a time," he continued. "If we parceled out parts of a document to several translators, we could get the work back much sooner, but the terminology and overall quality could be as varied as the translators."

After a year of deliberating, Solar decided to try computer-assisted translations and started searching for a package to fill its needs. A little over a year ago, Solar chose Weidner Communications, Inc.'s Translation System, which was "less pretentious and very hands-on-ish," according to Koch.

The software was put on one of the firm's Digital Equipment Corp. PDP-11/70 minicomputers being used for numerical machine tool processing. "We have several PDP-11s, we just put it on the one that had extra space," Koch explained.

"There were some ins and outs to begin with, but the problems were management-related," Koch said. The three-year-old company "seemed to be Dr. Jekyll and Mr. Hyde-ish; we weren't sure they'd stay in business.

"The people who were developing the systems and programming wanted to make it work, but management was less easy to work with," he continued. The software itself, however, has been a great success, having reduced turnaround time by 70%, Koch pointed out.

Translation Costs

It is expected to "probably" reduce translation costs as well. Using the system, the first draft of a translation is done by the computer. Then, using the system's text-editing capabilities, the human translator reviews the machine translation on one of two Beehive International, Inc. Model 500 terminals and corrects and polishes where necessary.

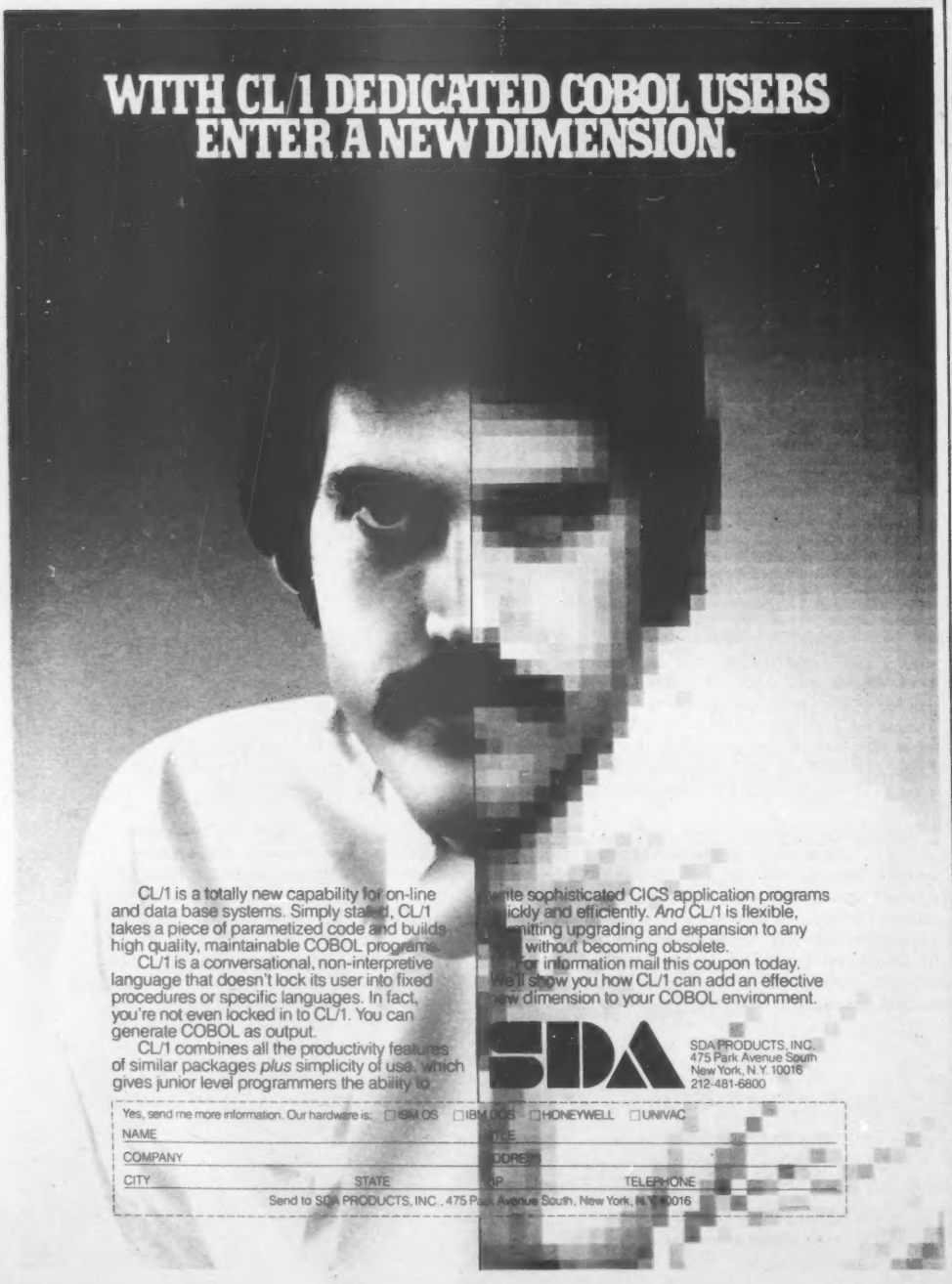
"This has several advantages," Koch said. "The computer ensures that words are constantly translated the way we want them. Since the computer prepares the first draft, our human translators can be more productive.

"Revising the machine translation is much faster than translating from scratch," he continued. "This enables one translator to see even large projects through to timely completion."

Human translators have responded positively to the system, as well. "The option to edit on the screen gives me the interaction I want between me and the machine," commented Lee Lopez, who is responsible for Spanish translations.

Lisa Wilson, who handles French translations, sees other benefits. "Once you've made a correction on the screen, you never have to see it again," she said. "Paper flow is greatly reduced since the computer eliminates the need for multiple copies of the translation in various stages of correction.

Solar can also set the computer to do its translations at night without supervision. "This enables us to have plenty of computer power available during the daytime when we share the computer with various other departments within the company," Lopez said.


WITH CL/1 DEDICATED COBOL USERS
ENTER A NEW DIMENSION.
CL/1 is a totally new capability for on-line and data base systems. Simply stated, CL/1 takes a piece of parametized code and builds high quality, maintainable COBOL programs.
CL/1 is a conversational, non-interpretive language that doesn't lock its user into fixed procedures or specific languages. In fact, you're not even locked in to CL/1. You can generate COBOL as output.
CL/1 combines all the productivity features of similar packages *plus* simplicity of use, which gives junior level programmers the ability to
write sophisticated CICS application programs quickly and efficiently. *And* CL/1 is flexible, permitting upgrading and expansion to any without becoming obsolete.
For information mail this coupon today. We'll show you how CL/1 can add an effective new dimension to your COBOL environment.
SDA
SDA PRODUCTS, INC.
475 Park Avenue South
New York, N.Y. 10016
212-481-6800
Yes, send me more information. Our hardware is: ☐ IBM OS ☐ IBM DOS ☐ HONEYWELL ☐ UNIVAC
NAME
TITLE
COMPANY
ADDRESS
CITY STATE ZIP TELEPHONE
Send to SDA PRODUCTS, INC., 475 Park Avenue South, New York, N.Y. 10016

Computer Fair Set for Seattle

SEATTLE — The Eighth Annual Computer Fair will be held here on March 3 and 4, sponsored by the Academic Computer Center of the University of Washington. One hundred vendors and 7,000 visitors are expected to attend this free fair.

Computer Fair seminars will also be available at no cost. *Omni* magazine writer Jonathan V. Post will give the keynote address on "The Far-Out Future" and other speakers will present panel discussions or seminars on the implications of AT&T deregulation, how to use the census data for planning effective use of word processing and how to automate a laboratory.

More information is available from the University of Washington, Academic Computer Center, HG-45, 3737 Brooklyn Ave., N.E., Seattle, Wash. 98105.

THE ONLY PROBLEM WITH BEING IBM, DIGITAL OR AMDAHL IS THAT SOME DAY, SOME KID IS GOING TO COME ALONG AND SHOOT YOUR SOCKS OFF.

We know the day.

It's coming this summer.

We know because that's when we're going to introduce a totally new kind of transaction processing system. One that solves so many problems in so many unique ways, ten of the country's leading venture capital organizations invested nearly $8,000,000 in it sight unseen.

And why will this amaze people like IBM, Digital, and Amdahl?

Because we were able to start with something they no longer have.

A blank sheet of paper.

Since we had nothing invested in old ways of doing things, we were able to look at transaction processing in an entirely different way. And develop, not a computer that does everything, but the first system dedicated to eliminating the three biggest frustrations in transaction processing today.

(1) Spending too much development time and money on data integrity/system recovery mechanisms.

(2) Getting application availability without paying performance penalties.

(3) Trying to transform a small system into a big one without your user audience ever being aware of it.

Those are the frustrations, the problems, the everyday facts of transaction processing life.

And you think they can't be dealt with? You think they can't be solved?

Well, just wait.

Until you see what rides into town this summer.

Because what rides into town this summer has a lot of backers who don't plan on being disappointed.

Not just the investors who put up the millions.

But a company that has attracted some of the brightest people in their fields from some of the best organizations in those fields. Operating systems people from Data General. Relational Data Base people from Livermore Labs and UC-Berkeley. Customer service people from Hewlett-Packard. Hardware people from Perkin-Elmer and Rolm. As well as seasoned veterans from IBM, Amdahl, DEC, Xerox and Intel.

And now we're looking for more partners in this unusual event.

We're looking for the best and brightest sales and systems people. Hotshots who've done it before, and want to do it all over with an opportunity for equity, but no limitations imposed by outmoded technology. In a start-up that isn't the usual mirror image of one other company, but a gathering of professionals from many other companies. If you're interested in that kind of environment, please send your resume.

We're also looking for the best and brightest customers (preferably those with a quarter of a million and a lot of patience) to provide Beta test sites.

If you're what we're looking for, call (408) 946-3191 and ask for Stan Joseph, Vice President, Marketing.

Oh. We're looking for attention, too.

And when the smoke clears on that day of destiny this summer, attention is what we'll surely have.

Not that IBM and the others should worry.

We're not going to bother them.

We're just going to surprise the living daylights out of them.

Synapse

WATCH OUR SMOKE.

© 1982 Synapse Computer Corporation,
801 Buckeye Court, Milpitas, CA 95035.

CAD/CAM Helps Design, Manufacture Airbus

TOULOUSE, France — Computer-aided design and manufacturing (CAD/CAM) is helping with the design and manufacture of the Airbus 300 aircraft family, according to the Aircraft Division of the Societe Nationale Industrielle Aerospatiale (SNIA) here.

With a passenger capacity between 210 and 300, the Airbus was designed to conserve energy resources, according to a firm spokesman.

Aerospatiale is the result of a 1970 merger between three major French aviation companies, one of which was a partner in the development of the Concorde supersonic jet, he said.

Four Divisions

The four divisions of the company — Aircraft, Helicopter, Tactical Weapons and Space and Ballistic Systems — employ more than 47,000 people in operations located in France, the U.S., Brazil and Indonesia. An estimated 7,000 people work in the computer operation area, he said.

Equipped with a Control Data Corp. CDC Cyber 750 and Cyber 174, Aerospatiale is working toward integration of all CAD/CAM components and products. It is also developing a central data base of parts geometries, descriptions, drawings and technical information for eventual retrieval in any of its operations worldwide, J. R. Auzanne, manager of the data processing center, explained.

Each of the two CDC Cyber systems are equipped with 262K words of memory and share 1,000K words of extended code storage. Two CDC 2550 communications systems support 67 interactive terminals, 16 of which are for engineering design and analysis, according to Auzanne.

A number of minicomputers also are linked to the CDC Cybers for remote job entry, as is a Cyber 16 for generating numerical control tapes for 50 parts-producing machines, he said.

Sigma, a software system developed by the company, designs complex three-dimensional curves and surfaces. Aself, also developed by the company, is an integrated finite element analysis system that accommodates a variety of structural problems including optimization of large and sophisticated structures, Auzanne explained.

Aerospatiale also uses design products from Computervision Corp., including 60 workstations that produce numerical parts, drawings and electrical diagrams, he noted. The company and CDC have developed the interface for the data base which has been implemented on the CDC Cybers.

No Easy Task

"Achieving this linkage and compatibility among the various software products was no easy task," Auzanne said. "The more design and analysis aids that are available to our engineers, the greater their productivity and problem-solving abilities. And by enriching our design resources, we develop a more effective data base."

Eight billion characters of information ranging from conceptual design to records and specifications are stored on the 25 CDC 885/844 disk units. By 1984 the company foresees a need for 30G characters of disk storage, he said.

With its major design software linked together, the company has created a sequence of aids that go from definition of geometry to the production of numerical control tapes.

The Unistruc software system, considered one of the most powerful in the firm's CAD operations, provides the preprocessor that is vital to structural design activities. With more than 10,000 points to be analyzed on the frame of the Airbus, a finite element program is important, Auzanne explained.

The combination of this software and the CDC Cybers has given the company a three-to-five ratio of improvement in the production of finite element models, he said.

Unistruc users can access the data base for automatic generation of a particular mesh and immediately begin whatever design activities are required. The software provides a number of features that contribute to productivity, Auzanne noted.

These include the ability to concentrate on one particular area of a structure and apply finite analysis techniques, an error detection program that flags impractical design input and changes and an instruction check routine that reminds users if an instruction has been omitted.

Sigma, the company's own design software system, gives more than 400 instructions, 160 of which are for creating geometrical elements such as points, lines, circles, planes and curves, he said.

The RSE VAX™ Timesharing Service

Six Great Reasons To Use Us.

FACT # 1 **RSE customers save up to 50% on total timesharing costs.**

Among national timesharing firms, our rates are up to 50% lower than the second most competitive firm. **And, we provide your terminals, line printers and other communications equipment custom fitted for your needs, on loan, normally at no extra cost.**

Compare the average CPU time costs: our maximum charge is $216 per hour, while the average charge, nationwide, is $360 per hour.

FACT # 2 **RSE customers use the finest equipment available — multiple DEC® VAX™ — 11/780 computer systems.**

RSE operates the best equipped VAX™ timesharing installation in the country and you have access to all its resources; including the Britton-Lee Intelligent Data Base Machine™, the DEC® floating point processor and the more than 1.8 gigabytes of disk storage.

FACT # 3 **RSE users have non-stop, never-down reliability.**

Our intelligent port selector provides you with instant access to multiple central processing units, each having access to a number of multi-ported disk drives. All systems are backed by an uninterruptable power system to keep your data processing on-line 24 hours per day — *eliminating down time completely.*

FACT # 4 **RSE customers have dual nationwide accessibility with both Tymnet® and Telenet℠ communication networks.**

Both networks are available to all of our timesharing users, with links to every major U.S. community. All timesharing customers are only a local phone call away. In addition, RSE is happy to install a dedicated lease line for customers who need even greater speed and efficiency.

FACT # 5 **RSE users have a virtually unlimited software library.**

RSE either has in its library, or will purchase any commercially available software package which you may need, *at no additional charge.*

Software programs already on the system include: FORTRAN, COBOL COBOL 74, BASIC, BASIC+2, BLISS, PASCAL, MACRO, PL/1, C, graphics, cross tabulation and the IMSL LIBRARY of mathematical routines. In addition, you can use INFO data base management system, LEX-11 word processing, the DATATRIEVE record management system, the complete IMS accounting system and many, many more.

If we don't have a program you need, we'll get it!

FACT # 6 **Our customers include many of the Fortune 100 companies.**

Among those are: two of the 20 largest oil companies worldwide, one of the 3 largest package goods companies worldwide, one of the 5 largest aircraft companies worldwide,one of the 5 largest restaurant chains worldwide and many more.

We are the best equipped VAX™ timesharing service in America.

To find out why many of this country's largest companies have chosen The RSE VAX™ Timesharing Service, call Tom Watson collect today.

CALL COLLECT (918) 225-6340

RSE
Rockie Smith Enterprises, Inc.

123 E. Broadway • P.O. Box 727 • Cushing, Oklahoma 74023

VAX™ is a trademark of Digital Equipment Corporation
DEC® is a registered trademark of Digital Equipment Corporation
Intelligent Data Base Machine™ is a registered trademark of Britton-Lee Inc.
Telenet℠ is a service mark of General Telephone and Electronics
Tymnet® is a registered trademark of Tymnet, Inc.
IMS℠ is a service mark of Interactive Management Systems.

IBM Loses Suit Over Suitor's Ties With Staffer

SAN FRANCISCO — A former marketing manager with IBM's Office Products Division (OPD) won a $300,000 judgment against IBM late last December. The judgment was received for wrongful termination of employment based on an invasion of privacy.

At the heart of the case was an office romance in which Virginia Rulon-Miller was involved with Matthew Blum, an OPD account manager whom she met while working at IBM. Rulon-Miller's problems began when she continued dating Blum after he went to work for a rival firm.

After accepting employment at the Philadelphia office of QYX, a firm associated with Exxon Corp., Blum returned to San Francisco and the two resumed dating for a period of time. Upon his return, Blum hired some former IBM colleagues to work at QYX. During the course of the case, IBM indicated that Rulon-Miller's association with Blum raised questions of conflict of interest and the possible exchange of business secrets.

But Rulon-Miller's attorney, John McGuinn, a partner in the firm of McGuinn, Hillsman and Palessky, argued that Blum knew everyone at the local IBM OPD office and could obtain information from anyone there.

Dismissal from her job in 1979 was a severe shock for Rulon-Miller, who at that time was considered one of the office's hottest sales people, reportedly earning $60,000 per year selling word processors and other office equipment.

The irony was that her loyalty to the firm during her 12-year career with IBM was apparently undeniable. Rulon-Miller began as a receptionist with IBM in 1967 at the Philadelphia office of the vendor's Data Processing Division. The company realized her potential, sent her to college and gave her increasingly responsible assignments in product planning at several U.S. locations prior to offering her a job at OPD in San Francisco in 1975.

In talking about her former employer, Rulon-Miller said, "I thought this was the place where I would be buried. You couldn't have got a critical word out of me about IBM if you'd nailed me to the wall."

In the suit, Rulon-Miller charged that because of her involvement with Blum she was removed from her OPD job and would have been transferred to a nonmanagement job elsewhere in the corporation. This was tantamount to termination — "being put out to pasture," she asserted. After this action by IBM, she quit.

IBM contended that she would have been offered a slot with no loss of pay or "perks." The firm also argued that it would have taken the same action if the individuals involved had been brother and sister.

In deciding the case, the jury determined that IBM had in essence terminated Rulon-Miller without good cause and had violated her right to privacy. The judgement included $100,000 in compensatory damages, $50,000 each for emotional damages and lost benefits and $200,000 in punitive damages, McGuinn reported. IBM has until March 1 to decide whether to appeal the decision.

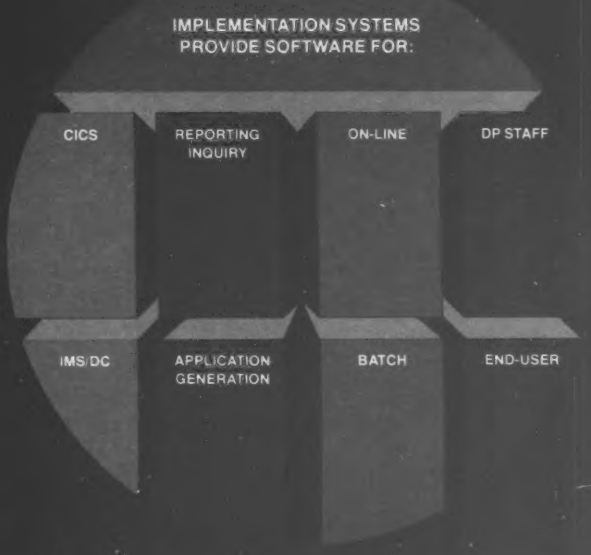
And Rulon-Miller? She is now working for an IBM competitor.

Arcom Meet Set for March 4

NASHVILLE, Tenn. — The Sixth National Agency Records Control, Inc. (ARC) User's Group convention will be a three-day program opening March 4 covering insurance agency computerization.

The meeting will include classes, computer demonstrations, panel discussions and guest speakers focusing on computer-to-computer interfacing between agencies and insurance companies.

The seminar costs $165 for the first day and $125 for each additional day. Arcom User's Group, Inc. is at Suite 580, 223 Perimeter Center Pkwy., Atlanta, Ga. 30346.



Together, we can implement solutions to your most pressing DP problems:

- An expanding application backlog.
- Scarcity of IMS and CICS expertise.
- A trend toward more complex, on-line applications.
- Escalating maintenance.
- Demands on the part of management for increased efficiency and a higher return on DP investment.

Informatics' Implementation Systems address every one of these concerns. Programmer productivity can be increased by an order of magnitude. Your application backlog can be further reduced because end users can generate their own reports, answer their own inquiries, releasing your programmers for more important tasks. Without any loss of security or resource control.

Implementation Systems are essentially transparent to IBM environments and data bases. Even less-experienced programmers can write error-free programs in a fraction of the time required by conventional techniques.

Most important, you can now have a complete choice of Informatics productivity tools, each designed to provide a cost-effective solution to your application requirements: MARK IV™ for generating batch applications; MARK V™ (IMS/DC) and TRANS IV™ (CICS) for on-line applications; *Answer™/DB*, *Answer 2™* and INQUIRY IV/IMS™ for supplemental reports or ad hoc inquiries.

Why waste another hour? Implement your own Implementation Systems inquiry by giving us a call. Or fill out the coupon and mail it today.

Informatics Inc./ 21050 Vanowen Street, Canoga Park, CA 91304
(213) 887-9121

☐ Send me complete details on Implementation Systems.
☐ Have a sales representative call me.

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____
Computer _____ Operating System _____

Informatics inc
Your Information Management Partner CW2682

Invoice System Sends Bills Pronto to Customers

NEW YORK — Like it or not, classified advertisers in the *New York Daily News* are receiving their bills on time.

A computer-generated "print-burst-mail" invoice system has shortened the lag time between printing and mailing customer bills, resulting in improved cash flow, less paperwork, lower mailing and telephone costs and fewer uncollectable bills for the tabloid newspaper here.

Approximately 1,000 to 2,000 bills are mailed daily from the paper to classified advertisers, explained Gene Rado, manager of the paper's Classified Billing Department.

In the past these bills were manually stuffed into envelopes, often creating a seven-to-eight-day backlog in billings. Because classified ads are usually for small amounts, typically $35 to $40, a more cost-effective and swifter method was needed for these billings.

To alleviate the backlog, the newspaper acquired a new invoice system, designed by Wallace Business Forms, Inc. of Chicago, which is a single unit composed of a top sheet and a mailer that holds a return envelope and the customer's bill. Now, as soon as the amount of the bill is generated by the computer it is ready for mailing.

Rado reported that with the new form system, invoices are sent out on schedule and fewer second and third notices are issued. Moreover, there are fewer customer complaints about miscollated, late or duplicate bills.

Rado worked for two months revising the program with the paper's controller and a sales representative from Wallace. The program needed very little change except for print positions, he recalled.

By adopting the computerized system, the team managed to eliminate costly and tedious clerical labor without changing the paper's way of performing the billing function.

At the *Daily News* the billing process begins the moment a customer telephones to place an ad. The telephone ad-taker types the advertiser's request directly onto a four-page insertion order and sends a copy of the ad placement to the Classified Billing Department.

From there a keypunch operator transcribes the necessary billing information onto a computer tape, which is fed into the system each day for processing.

The computer is programmed to generate customer invoices on the expiration date of the ad and at two subsequent 15-day intervals before a final notice of nonpayment is sent or until the bill is paid.

When the customer pays the bill, the keypunch operator again records the information onto computer tape and the advertiser's record is updated. Since advertisers have been receiving their bills more speedily, Rado reported turnaround payment of bills has been quicker.

MEDICAL/ DENTAL COMPUTERS
A $400,000,000 market!

If you're in this market or want to be, then you should attend this
2 day seminar
March 1 & 2
in Philadelphia

Day 1: The computer in the professional office
Day 2: How to find the doctors and sell them computers

MATCH GAME: for reps and companies wanting to find each other.

Send for details:
The Educational Cooperative
245 South 17th St.
Philadelphia, PA 19103
(215) 545-5555

Fee includes hotel room at the Franklin Plaza (Philly's newest), lunch, and all materials. $295 one day; $495 two days.

IN A WORLD FULL OF MEDIA HYPE, HOW DID DYSAN COME SO FAR SO QUIETLY?

Or so fast? We didn't become a $100 million-plus company in less than nine years by producing just any magnetic media. We did it by making the best. The best in disc packs. In single rigid discs. In disc cartridges. In diskettes. And in mini-diskettes. Many major OEM's have recognized the difference that Dysan quality can make. And have endorsed it with their own private label.

Today, there are sales offices and distributors in the United States and throughout the world, selling and servicing Dysan precision magnetic media . . . to OEM's, end users and retail outlets. If our media was just like everyone else's, we never would have come this far this fast.

Precision magnetic media from Dysan. Our media says it all.
For the location of the Dysan sales outlet nearest you, contact Dysan at: (408) 988-3472 Toll Free: (800) 538-8133 Telex: 171551 DYSAN SNTA TWX: 910-338-2144

Dysan Corporation, U.S. Sales Offices:
St. Louis, MO, (314) 434-4011 / Sunnyvale, CA, (408) 730-2145 / Sherman Oaks, CA, (213) 907-1803 / McLean, VA, (703) 356-6441 / Irvine, CA, (714) 851-9462 / New York, NY, (212) 687-7122 / Schaumburg, IL, (312) 882-8176 / Fair Oaks, CA, (916) 966-8037 / Glendora, NJ, (609) 939-4762 / Bellevue, WA, (206) 455-4725 / Atlanta, GA, (404) 952-0919 / Arlington, TX, (817) 261-5312 / Burlington, MA, (617) 273-5955 / Rocky River, OH, (216) 333-3725 (in Cleveland) (412) 261-0406 (in Pittsburgh) / Livonia, MI, (313) 525-8240.

Dysan Magnetic Media is also available Worldwide:
Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, China, Denmark, Ecuador, Finland, France, French Polynesia, Greece, Guatemala, Hong Kong, Iceland, India, Israel, Italy, Ireland, Japan, Korea, Malaysia, Martinique, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Puerto Rico, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, Uruguay, Venezuela, Western Germany.

Dysan Flexible Diskettes are also available from all Computerland Stores, Sears Business System Centers, and many independent computer outlets nationwide.

Not Yet a Migration

Study Examines High-Tech Lure of Sun Belt

By Jim Bartimo
CW Staff

NEW YORK — As this winter's brutal cold snap engulfs the nation, many Northerners are vowing to move someplace where cold weather is only talked about on the national news. But how many will actually make the move in the next decade is a question recently asked in a study entitled "The 1990 Worker" from Theodore Barry & Associates.

There is conjecture that the Sun Belt, with its higher temperatures and less crowded conditions, will fare better than other areas in attracting the sought-after computer professional, according to the report.

The study forecasts an average of almost 30,000 job openings per year for systems analysts, programmers and computer operating personnel from 1978-'90. It also indicates that there will be far fewer of these professionals to fill the industry's needs.

Only two out of 21 contiguous Sun Belt states registered less than a 15% increase in population from 1970-'80. Seven of the states grew by more than 30%, the study said. These fast-growing states form an arc covering the West, the Mountain States and the South. And computer professionals are considered among the most mobile elements of our society, according to the report.

Will a mobile population in high demand choose the most desirable climate in the country in which to live and work? There are rumblings among computer professionals in both the Sun Belt and the North that the trend has not yet begun.

No Significant Migration

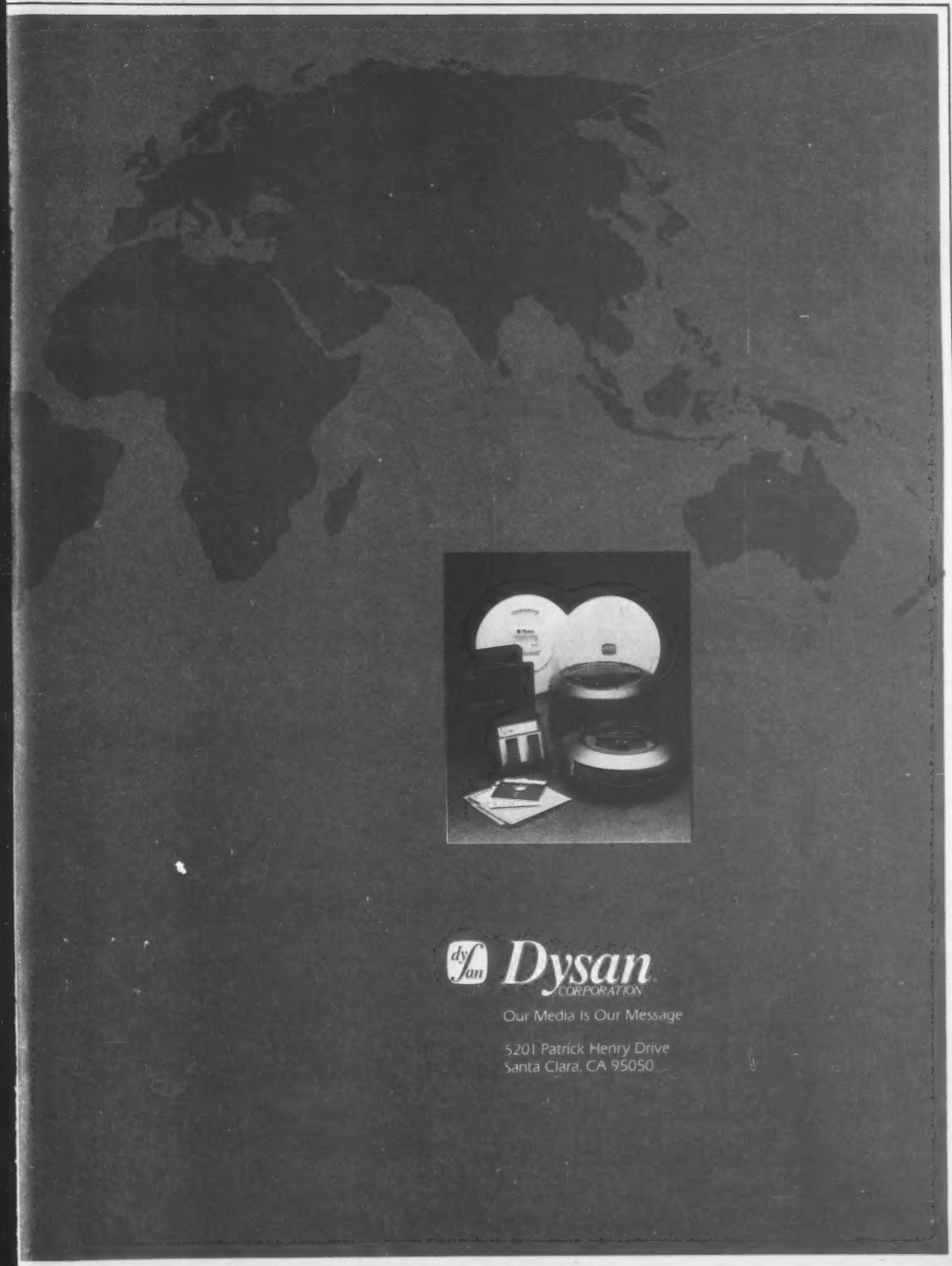
Dave Hill, manager for data systems and communications for Data General Corp. in Westboro, Mass., has not noticed a significant migration from his department. But neither has he seen a significant move to Massachusetts. "People who live in this area usually want to stay," he said. "It's more difficult to attract people to this area, but I often find that people originally from this area want to stay or return here."

Other DP managers from high-tech areas like Massachusetts also noted little or no decline in their technical staffs because of programmers or analysts who were searching for warmer climes.

Carroll D. Leu, data processing manager for Tandy Computer Services of Fort Worth, Texas, is aware of a migratory trend even though it has not yet hit his department.

David Gust, director of international training and former DP manager for Datapoint Corp. of San Antonio, Texas, has seen quite a few computer people moving into the Sun Belt. But most are from areas other than the Northeast, he noted.

New York is one of the states mentioned in the study that has seen a drop in total population in the last 10 years. Michael Martyn, director of group management systems for Burroughs Corp. Office Products Group of Rochester, N.Y., said, "There are some incidences of movement but it's not a significant change. I certainly wouldn't call it a migration. There is movement but there's only a slight bias toward the Sun Belt."



All U.S. Sales/Use Tax Rates on magnetic tape...

SALESTAX®

Vertex Systems Inc.
1000 Old Eagle School Rd., Wayne, PA 19087
215-687-9060

If you want to know if UFO helps
CICS application programming, listen to the...

"word of mouth"

Greg O'Reilly, Systems Manager, Figi's, Minneapolis, MN "We have gotten many applications going because UFO is so easy to use... jobs such as on-line credit card verification, file maintenance utilities created without CICS mapping, and many small requests by user departments. Most of our people aren't CICS trained."

Steve Harris, Director of MIS, Children's Hospital, Boston, MA "The first thing I did when I joined the hospital was buy UFO because i used it for more than a year at my last job; we are simply more productive in our on-line development with UFO. Many projects which were too expensive with traditional CICS technology become cost-effective when you use UFO.

"UFO trades off machine power for people power. While it takes a reasonable amount of training to teach someone UFO, you certainly don't have to be a CICS programmer to use it."

Ken Cyrus, Database Manager, Carter Machinery, Salem, VA "We were looking to get on-line transactions up faster than under standard COBOL. We had DMS installed for two weeks, but got absolutely nothing done. Within the first two weeks with UFO, we had at least 20 to 30 VSAM update/inquiry programs up.

The most surprising thing about UFO was its execution speed. I never figured anything interpretive could execute as fast as it does."

Frank Scafidi, Director of Technical Services, University of Pennsylvania, Philadelphia, PA "Two years ago we had 10 applications up under CICS. Today, we have over 50 applications up under UFO. We never could have done so much without UFO."

OXFORD SOFTWARE CORPORATION

174 BOULEVARD • HASBROUCK HEIGHTS, N.J. 07604 • 201-288-1515

800-631-1615

750,000 Tax Bills Delayed

System Repair Ends County Tax Break

By Tim Scannell
CW Staff

GREENVILLE, Miss. — While people here and in Washington County probably are not overjoyed at the prospect, they have finally received their tax bills that were delayed late last year by a broken computer system.

The errant system — centered around two IBM System 3 Model 10 processors — is owned by Datax, Inc., a service bureau based in nearby Pascagoula that specializes in government data processing and prepares more than 750,000 tax bills each year for about 17 state counties — all at the same time of the year, Eddie Martinez, the firm's vice-president and owner, explained.

The firm finally tracked the computer's problems to a faulty cable that connects the system's memory, which is split between the two machines, but not before the computers were down for a few weeks with burnt-out wires and boards and Datax ran about 30 days behind its processing schedule.

While the faulty connector cable was the source of Datax hardware problems, the firm also got caught in the middle of who was responsible for locating the problem and repairing the machines: Sorbus, Inc., a third-party maintenance firm that maintained the IBM computers, or Data Decisions Corp., makers of one-half of the system's split memory.

Although both companies had service centers located about two hours from Datax, neither could reportedly isolate the problem since it occurred with equipment under the wing of separate vendors.

"One was blaming it on the other," Martinez said. "It was hard to coordinate them in here and get them to work together."

The two firms finally did get together and repair the malfunctioning system. However, a lot of city and county tax departments were upset by the processing delay.

"It's been one big picnic," Katie Brown, Greenville's tax collector, pointed out. "They said the computer was down and it took them quite a while to get it fixed."

By the time Datax did fix the computer, about 16,000 tax bills had been delayed, she said. However, the tax bills have been processed and the payments are coming into the city's coffers.

"Of course, no one called up to complain that their tax bills had not arrived," Brown quipped

Although this is the second year Greenville's tax department has used Datax to process its tax bills, next year collectors plan to do their own data processing using computers located at the Delta Medical Center. The IBM computers at the hospital are accessed on a time-sharing basis through terminals at the county tax office.

Even though things are up and running according to schedule at Datax, the firm is still suffering from a little red-faced embarrassment.

"We hope we've maintained a little bit of credibility with our customer base," owner Martinez said. "People in the computer business will understand, but when you get outside there is no sympathy whatsoever."

Cbema Meeting Set for March

WASHINGTON, D.C. — "Telecommunications — What Now?" is the title of the opening session of the Computer and Business Equipment Manufacturers Association's (Cbema) 1982 spring meeting, scheduled for March 21-24 in North Miami, Fla.

Joseph A. Boyd, chairman and chief executive officer of Harris Corp., is scheduled to address the opening session of the meeting, which will be held at Turnberry Isle Country Club and Inn. This session reportedly will feature senior level federal and telecommunications industry officials.

Among those addressing the second session of the conference on Tuesday, March 23, will be John F. Stacks, national political correspondent for *Time* magazine. The session will cover both foreign trade and telecommunications and how they overlap and interact, according to Cbema. A session on the computer industry and national security implications will round out the March 23 program.

On March 24, Stephen T. McClellan, vice-president of Salomon Brothers, will speak on the subject of market trends in the computer and information processing industry.

The overall conference theme is "Cbema in a Revolutionary Environment." The meeting is intended to focus on environmental changes seen for the computer industry and the world economy brought about by fast moving events in both telecommunications and foreign trade. At least 150 executives of the computer and business equipment industry are expected to attend.

Cbema is headquartered at 1828 L St., N.W., Washington, D.C. 20036.

Two very good reasons not to buy a Dasher.™

EXCEL 72D

Introducing Dasher™ compatibility in both black and white and color.

Though priced much lower, both new Datamedia terminals boast state-of-the-art ergonomics and offer advanced performance not available on comparable Data General models.

Our new EXCEL 72D (model 74D with optional 14" screen) features 80- and 132-column displays, keyboard set-up parameters, business graphics, split screen, line insert/delete, even smooth scrolling.

Our new ColorScan 70D gives you all this plus an 8-color display with selectable foreground/background colors and extended business graphics.

For superior reliability, both new Datamedia models feature advanced LSI technology, CRT savers, self-diagnostics and works-in-a-drawer accessibility. And both come backed by a national service network.

The new EXCEL 72D/74D and ColorScan 70D. Two very good reasons to buy Datamedia when you think of Dasher.

Get smarter. Call (609) 665-5400, or write the smarter terminal maker: Datamedia Corporation, 7401 Central Highway, Pennsauken, NJ 08109.

ColorScan 70D

EXCEL 72D/74D
ColorScan 70D
Make me a smarter terminal buyer.

☐ Send EXCEL product information.
☐ Send ColorScan product information.
☐ Have your sales representative call.

Name _____
Company _____
Address _____
City _____
State _____ Zip _____

Return to: Datamedia Corporation, 7401 Central Highway, Pennsauken, NJ 08109 (609) 665-5400

DATAMEDIA

From the smarter terminal maker.

Dasher™ is a trademark of Data General.

Disk Switch May Save Hospital Megabucks

MEMPHIS, Tenn. — Baptist Memorial Hospital here, the largest private hospital in the U.S., estimates it will save at least $1 million in computer room relocation costs by replacing removable disk drives with Winchesters.

Ron Scoggins, the hospital's director of data processing, was faced with the choice of relocating the computer room or finding more compact disk space than was required for its 60 assorted Digital Equipment Corp. removable pack disk drives and 22 controllers.

"Even though our data processing is distributed and runs on different machines, it is physically located in the same computer room," Scoggins explained. "This gives us environmental and operational control, but space is at a premium and we have outgrown it," he continued. The computer room has about 1,750 square feet of space.

The hospital is the city's largest employer and admits 65,000 patients annually.

Winchesters appeared to be the perfect answer, Scoggins said, because they doubled the amount of usable computer room space, were more reliable than the installed disk systems and decreased maintenance costs. The Winchester units are used in a four-per-cabinet "rack and stack" arrangement. About 40 Winchester units were installed.

The hospital chose 160M-byte Winchester disk systems made by System Industries, Inc. of Sunnyvale, Calif. System Industries gave the hospital a trade-in allowance on the old drives. Since the hospital's system is completely on-line, there was no need for removable media.

Energy savings were an added benefit of converting to Winchesters because they give off less heat. When the current equipment is replaced, Scoggins predicted he would be able to take an air conditioner off-line.

Handled In-House

The hospital's DP needs are handled totally in-house. The system handles every facet of the hospital's operation, including admissions, laboratory tests, pharmacy, radiology and financial operations. To do this Baptist Memorial uses six DEC PDP-11/70s, two PDP-11/60s and four PDP-11/44s.

Scoggins estimated uptime for these systems, which run 24 hours per day, seven days per week, at 98.9%. The hospital's DP operation also supports a combination of 400 terminals and printers placed throughout the facility and peripherals are constantly being added.

In analyzing the downtime, Scoggins said he found the bulk of it resulted from electromechanical devices, the disks in particular.

"We figured some form of Winchester technolgy could cut downtime and eliminate the need for a hardware backup facility," Scoggins said. With the Winchesters Scoggins expects a total system uptime of about $99.6%.

EMULEX IS MORE THAN ABLE TO COMMUNICATE WITH DEC.

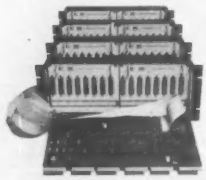
We're also able to save you plenty: For instance, you get DH11 performance for a DZ11 price. Four new space-saving single-board communications multiplexers. And an increase in VAX-11 terminal handling capacity by up to 50%. Maintained nationwide by Control Data.

Microprocessor-based architecture and common hardware deliver faster, more flexible line-handling. Self-test on power-up. Full software transparency. And Emulex reliability standards.

Communicate with Emulex now. Write or call Emulex Corp., 2001 Deere Ave., Santa Ana, CA 92705; (714) 577-7580, TWX 910-595-2521.

For immediate off-the-shelf delivery, call our national distributor: First Computer Corporation, 645 Blackhawk Dr. Westmont, IL 60559. (312) 920-1050 In Europe: Emulex Corp., 10th floor, Cory House, High Street, Bracknell, Berkshire, England. Telephone 0344-84234; Telex 851-849781.

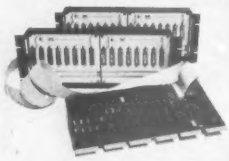
CS11/H (PDP-11) $7560 for 48 lines*
CS11/U (VAX-11) $7884 for 48 lines*



Up to 64 DH11 channels from one board.

DH11-compatible MUX lets you mix RS-232 & current loop interfaces in 8-line groups. Built-in DM11-compatible modem control. DMA output eliminates host interrupts. Self-test capabilities. Transparent to PDP-11 software. Emulex' own software on VAX.

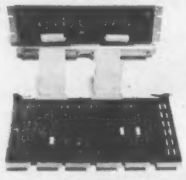
CS11/V $4464 for 16 lines*



Higher DV11 performance, lower price.

DV11-compatible multiplexer. Mixes 8-lines synchronous & asynchronous on PDP-11s. Ideal for Bisync & DECNET. 8-32 lines per controller. DMA input & output. Software transparent under DECNET. Compact package offering higher line-handling speeds & improved throughput.

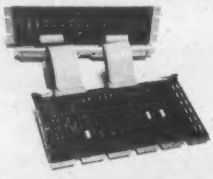
CS21/Z $2520*



Replace DEC DZ11/E and save.

Perfect if you don't need DH11 performance. Software-transparent to all DEC operating systems. Easy PROM change enables quick upgrade to DH-11 performance. Saves one slot per 16 lines.

CS21/U (VAX-11) $2844 for 16 lines*
CS21/H (PDP-11) $2520 for 16 lines*



New economical DH11-type multiplexer.

Lowest cost, high-performance communications MUX. Priced way less than DEC's DZ11, with DMA to boot. 16 RS-232 lines per board, modem control included. Can use H317 distribution panel. Transparent to PDP-11 software; Emulex software on VAX.

*Price each in 100 quantities. All Emulex disk, tape, and communications products can be combined to reach quantity price breaks.

EMULEX
The genuine alternative

Program Helps Locate the Lost

TUCSON, Ariz. — The next time someone is lost in the deadly heat of the Sonora Desert, he may be rescued by a calculator. Using a program written by a veteran of desert searches, a calculator can now determine the probability of finding a lost person in a given area.

In a computer-assisted search, experts would first reach an agreement on where to start looking. Then the information about the area would be fed into the program written by University of Arizona mathematics professor John Bownds. As helicopters flew over the area, they would eliminate parts of the search area and statistically evaluate the probability of finding the person there.

With each pass of the helicopter the probability would change until the person was found or the search director decided to abandon the search area. Other areas could be searched or the project could be called off completely.

"The last time we used it," Bownds said, "we reached a 98% figure before we decided to terminate the search. The person was eventually found in another area.

"It's difficult to know how well the system is working because we don't know how well we would have done if we didn't have it. But helicopters cost $650 to rent, so it is successful to not continue the search of an area with a low probability," Bownds said.

The program was written on a Data General Corp. Eclipse S/230 computer and the hand-calculators are Texas Instruments, Inc. Model 59s.

Bownds is a volunteer for the Pima County sheriff's office — the group responsible for conducting desert searches when someone is reported lost. He has been helping with rescue missions for the past nine years and said that with the help of the computer the search is more systematic.

The development group hopes to make the system available to search managers throughout the West and Mexico. They also hope to someday measure the performance of different kinds of search parties in different kinds of terrain.

Enhanced Project Control Reaps Benefits

Architectural Firm's System Spots Problem Areas

SAN FRANCISCO — "While using a computer for architectural drafting is now widely accepted, it is still project management that should be the focal point of any computer system in an architectural office," according to James Richardson, controller of the architectural firm of Kaplan/McLaughlin/Diaze here.

Kaplan/McLaughlin/Diaz was started in 1963 and now occupies an 18,000-sq-ft building. The firm's practice covers medical, commercial housing and renovation, and the staff of 125 is expected to grow to 150 by the end of the year, Richardson said.

Richardson maintained that most professional organizations are generally not business-oriented. But computers can go a long way in making up for that deficiency, he said, pointing to his firm's computerized management control system. That system is centered around a Basic Four Corp. Information Systems Division 410 from Management Assistance, Inc.

The architect's computer provides data on project status and can produce financial statements. It helps give a clearer picture of profits by keeping track of payments for work completed and incomplete, Richardson said.

Keyboard/Display Units

The system includes three keyboard/display screen terminals, one of which is in the office of the managing partner. He can call information on the current status of any project by typing the job number, Richardson said. The screen then presents the budget, budgeted hours, actuals, earned budget, variances and available budget to complete the phase or project.

This data is also included in the regular status reports that are printed out at the end of every pay period and given to the project managers. These printouts have been designed to highlight a particular feature that the firm believes is crucial to their management success, Richardson said.

Each project architect periodically provides his best estimate of the percent of the current project phase that is completed. The computer calculates the percent completion based on what proportion of the budget has been expended for that phase, he said.

The architect's estimate and the computer's calculations are displayed side by side on the biweekly printout. The project manager and managing partner can spot any project getting into trouble early enough to get it back on the right track, Richardson noted.

Explaining the profit computations, Richardson said, "You may be allowed by the contract to bill 50% when halfway through the schematic design phase. But for an accurate picture of the firm's financial situation, you only want to recognize the income that represents the efforts you've actully put in on the job so far.

"So the computer, with a little external judgment, will defer the portion of the revenue that hasn't been earned yet. The effect is that profit isn't overstated — your financial sheet gives a very accurate representation of your profit at that point in time," he said.

"This is a very sophisticated concept," Richardson said. "A lot of architectural firms have not come to grips with it yet. But we find it extremely valuable, and I think others will too, once they recognize that this kind of information can be available."

Before converting to this system, the firm used a combination of manual record keeping and an outside computer service bureau. "Reports were received so late that by the time we discovered a job was in trouble, it was usually too late to do anything about it," Richardson said.

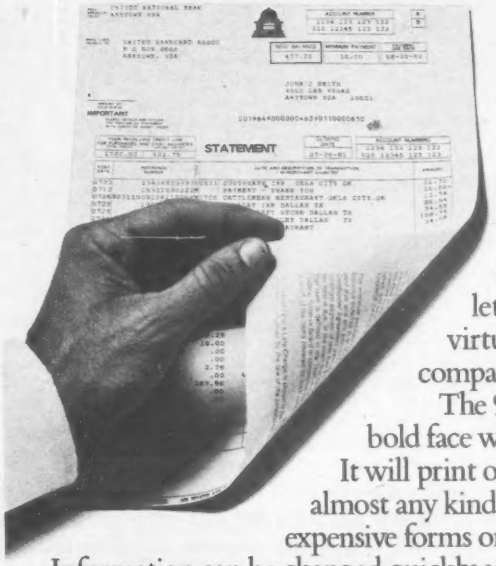
"We ultimately chose a system largely on the basis of who was prepared to give us the most support in developing software tailored to our own requirements," Richardson said.

The firm also uses Basic Four Dataword II word processing software and may add another terminal to increase the word processing capability, he said. It has proved convenient to store project reports and edit them as appropriate.

Summarizing the experience of converting to a computer, Richardson said the primary benefit is enhanced project control, resulting in an appreciable improvement in the firm's profits.

"Rogers, When Are You Computer Types Going to Make an Error in Our Favor?"

NO OTHER ELECTRONIC PRINTER CAN MAKE THIS STATEMENT.



The statements your company sends out make a statement about your company. That's why you should print them on the Xerox 9700 Electronic Printing System.

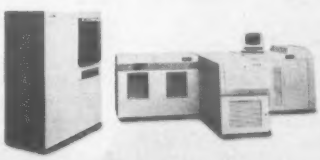
The 9700 is the world's most advanced electronic printing system. Only the 9700 can turn digital information directly into a letter quality statement with virtually unlimited type styles. Even company logos.

The 9700 will print medium, fine and bold face with fixed or proportional spacing. It will print on both sides of the page using almost any kind of paper. And there's no need for expensive forms or overlays.

Information can be changed quickly and easily and statements can be individually customized. What's more, the 9700 will print cover letters and other promotional pieces along with the statement itself.

Xerox wrote the book on customer statements. In fact, if you'll contact us, we'll make sure you get a copy. Write to Keith Davidson, Xerox Printing Systems Division, 880 Apollo Street, P1-60, El Segundo, California 90245. We'll send a Xerox representative with your copy of "The Xerox Electronic Printing Guide to Customer Statements."

And start making a statement that speaks well of your company.



XEROX and the 9700 are registered trademarks of XEROX CORPORATION.

XEROX

As Integrated Business System

Dynabyte 5300 Earns Worthy System Tag

By Hillel Segal
Special to CW‡

An integrated business computer system, which is offered with accounting and word processing software, the Dynabyte 5300, was a strong performer in the Association of Computer User's (ACU) benchmark testing.

Because it uses the same processor and compiled Basic language as the Altos Computer Systems, Inc. ACS8000-15, many runtimes recorded during the tests of the two systems were very close. The Dynabyte system offers somewhat greater expandability, however, and also differs in that the vendor supplies its own set of applications packages.

The 5300 is the second smallest in Dynabyte's 5000 series of business computers. All use the same Z80A processor and S-100 bus architecture. The entry-level model, the 5200, offers dual minifloppy drives while the 5300 has standard 8-in. drives. Larger systems in the line include Winchester hard disk storage and some have removable cartridge tape drives as well.

The Dynabyte systems were tested for ACU by the Business Research Division of the University of Colorado. The benchmark reports include the results of CPU and disk I/O-intensive tests, three real-life applications problems and a program editor comparison.

The full reports include an examination of the hardware and software aspects of the computers, plus a review of the documentation and results of telephone interviews with system users. The benchmark runtimes are not meant to be used alone as the sole basis for comparing different models of computers, but can be taken as one measure of performance within the complete context of software, accessories and vendor suitability.

Shown in the scorebox are the results of two application tests, the scientific/engineering and the accounts receivable test. The former is an exercise in solving a set of simultaneous equations, using no disk access, while the latter sets up and modifies a hypothetical set of customer accounts stored on the disk.

Except as noted, all results shown here are runtime only. Several systems have used compilers and while the compile times are given in the full benchmark reports, they are omitted here. In practice, the end user would not be concerned with compile time since it is part of the program development process.

Performance Similarities Seen

In many of the tests, the Dynabyte 5300 gave times nearly identical to those of the Altos ACS8000-15. A look at the internal specs reveals that the result should not be too surprising: both use a Z80A microprocessor running at 4 MHz, and both were tested with the CP/M operating system and Microsoft compiled Basic-80 language.

The Dynabyte system was a little slower on the accounts receivable test, perhaps reflecting differences in the floppy disk systems used. Both were also tested using a hard disk drive, and here the times were again separated by only a second or so.

The Model 5300, as tested, included the processor with 64K bytes of memory (expandable to 400K bytes), two disk drives for a total of 1.6M bytes of storage, an intelligent CRT terminal and an Epson America, Inc. MX-80 printer. Double-sided drives are also available, doubling storage capacity.

The software used included the Dynabyte DOS operating system (an expanded version of CP/M) and compiled Basic. Total price at the time the unit was tested was $8,535; a price reduction has since knocked $400 off both the processor and disk drives, lowering the total package cost to $7,735.

These components were priced separately, and it should be noted that Dynabyte does not specify or price any specific printer model. Any standard dumb terminal can be used with the system; the Dynabyte terminal (Model 5022) has a number of special function and programmable function keys and displays underlined, blinking and reverse video characters.

The processor uses the S-100 bus, having a total of 12 card slots. One parallel port and two serial ports are standard. Extra terminals can be added with special interface modules, each of which supports up to eight ports.

All CP/M-compatible languages are supported by the system, including Basic, Fortran, Cobol and Pascal.

While the 5300 was tested using a CP/M-type single-user operating system, Dynabyte now offers MP/M and Phase One Systems Oasis for multiuser operation. The Dynabyte DOS Version 4 is a fully implemented MP/M system with additional enhancements, supporting up to eight terminals and 16 printers. Each terminal can access any printer with spooling of the printers so work at the terminal is not interrupted. CP/M programs can run under the multiuser DOS without modification; however, the maximum program size is 48K bytes.

The Oasis operating system supports up to 16 users in a time-shared, multitasking environment. It includes features such as direct, sequential, keyed and Isam files, file locking, passwords and dynamic user accounting. Extra languages supported under the operating system include Forth and C.

Dynabyte supplies three types of software for its systems: business accounting, financial planning and word processing.

The accounting system contains six application modules that are standard and one that is optional. The standard modules are sales order entry, accounts receivable and payable, inventory control, purchase order management and general ledger.

Designed to be used with the enhanced MP/M operating system, the accounting package (called Business Manager) can be used in a single or multiuser environment. It is completely menu-driven, including all backup utilities and file security. An on-line help function is provided to give extra information on the various functions.

The integrated nature of the packages allows users to post only one set of entries per transaction, with subsequent entries in other modules handled automatically by the system. Various customization features allow users to modify aspects of the programs, such as aging periods for reports, customer credit terms and finance charges.

The software comes with a training diskette including sample data and step-by-step instructions for using each application.

The financial planning package, called Business Planner, provides an electronic spread sheet much like that of the popular Visicalc program. It allows the user to set up and label rows and columns (up to 50 rows by 20 columns, expandable with use of another software module), then designate calculations to be performed by the system. If the input variables are later changed, the calculations are automatically performed again by the system.

Typical uses of the planning package include financial report preparation and capital budgeting. Like the accounting system, the planning package may be used in either single or multiuser environments.

The word processing software offered by Dynabyte is the popular Wordstar package, designed by Micropro International Corp.

SCOREBOX

System: Dynabyte 5300
Current Price: $7,735

SYSTEMS UP TO $25,000

	C-1 Scientific Engineering Time (min)	C-3 Accounts Receivable Time (min)
Pertec PCC 2000	28:48.4	6:04.3
North Star Horizon	12:01.9	1:57.7
Cromemco System Two	14:52.6	2:48.0
Texas Instruments 771	22:05.4	3:38.1
Vector Graphic System B	19:30.0	5:56.5
Decstation 78	7:55.7	4:21.5
Radio Shack TRS-80 Model II	20:00.7	3:38.6
Apple II+	21:11.0	6:17.4
Digital Microsystems DSC-2	13:24.9	3:28.8
Ohio Scientific C3-A	12:10.7	15:49.3
Alpha Micro AM-1011	5:18.3	3:25.3
Data General CS/10 Model C1	58:21.0	*
SD Systems SD-200	17:42.8	6:16.4
Wang 2200SVP	2:13.3	2:23.0
Altos ACS8000-15	7:54.5	10:41.5
Altos ACS8000-6 (hard disk)	7:54.5	1:35.1
NEC Astra 205	14:27.9	5:10.8
Dynabyte 5300	5:39.5	4:38.0
Billings BC-12 DFM	to be covered	
IBM Personal Computer	in future issues	
IBM 5120		

* Tested with hard-surface disk rather than floppy. C-3 time was 2:40.3.

This is the 46th in a series of articles giving the highlights of benchmark tests conducted on popular small computer systems. The full reports were originally published by the Association of Computer Users, a 4,000-member nonprofit organization.

Hillel Segal is president of the Association of Computer Users, a nonprofit association with members in the U.S., Canada and several other foreign countries. A package of information about the Association of Computer Users is available from the group at P.O. Box 9003, Boulder, Colo. 80301.

STRATUS VS. TANDEM

(Or how the hardware non-stop solution has made the software non-stop solution obsolete.)

"If you drive down the cost of physical hardware, you can make typically redundant paths for less money. Not surprisingly, most redundancy breakthroughs that will occur happen in hardware rather than in software.

You can build a double computer inside one box for less dollars, as opposed to doing it in software, which continually needs maintenance and revision, as well as improvement."

by Aaron Goldberg
of IDC which
appeared in COMPUTERWORLD's
December 28,1981 issue.

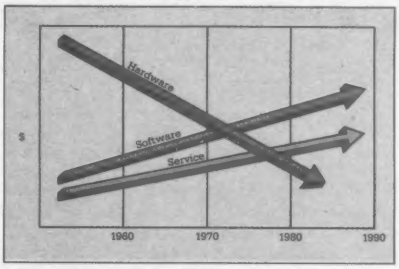
	Tandem	Stratus
1. Does it require additional system design and additional software to implement non-stop processing?	Yes	No
2. Is there a trade-off between reliability and performance?	Yes	No
3. Can the system be repaired while it is processing by a non-technical person?	No	Yes
4. Can you add modules of processing power without stopping the system?	No	Yes

Now that the computer age is in full stride, 100% availability is fast changing from a luxury to a necessity. Downtime and its costs are unacceptable, especially when there is an alternative. Now that non-stop operation is becoming a universal requirement, there is demand for an improvement over the traditional approach. These computers must provide better performance, be easier to use, be easier to program and re-program, be less complicated and less expensive. We believe that the Stratus hardware based non-stop system answers these demands. Let us explain.

Why more hardware is better than more software.

The crux of the problem with Tandem's software based system is that it requires complex, performance stealing software to provide non-stop operation. This software robs the system of precious resources because it uses processing cycles to pass status and checkpoint information back and forth between two computers. What's more, this passing of information must occur at four levels: operating system, user program, file management, and terminal control.

Stratus, meanwhile, has eliminated all this reliability software by having duplicate hardware components tightly coupled, dedicated to performing the same tasks at the same time. It's like having two computers in one, rather than two separate computers. Checking hardware logic detects errors with no performance loss and stops failing components instantly. The duplicate partner continues without interruption, unaffected by the failure. This is all transparent to the programmer and the user. With Stratus, there is no performance or data loss when there is a failure, no operator intervention, and no special programming.

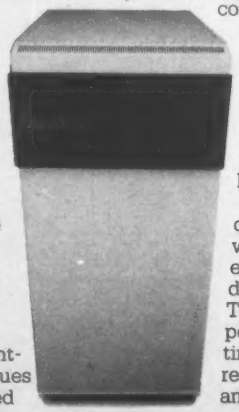


While software costs will rise because they are people dependent, experts agree that hardware costs will continue to fall

Why Stratus is easier to implement than Tandem.

The Stratus designer and programmer might as well be dealing with a conventional computer; one of them, not two. Programmers are in a familiar environment. By providing industry standard languages, applications can be moved over without redesign or major reprogramming. Non-stop operation is a bonus, not a complex effort.

With Tandem the system designer and programmer is working with two computers. (An environment unfamiliar to most designers and programmers.) This approach requires more experienced personnel, takes more time for application development, requires continual maintenance, and as a result is more costly.



Hardware costs less.

The Stratus concept could not have been executed 10 years ago, 5 years ago, or even 2 years ago. It certainly couldn't have been done in 1974 when Tandem started developing its system. It is possible now because of the dramatic price drop of hardware components. Because of this lower cost of hardware, and because of the simplicity of its architecture, Stratus can offer continuous processing at a price competitive with traditional systems that don't offer non-stop processing. Compared with Tandem, Stratus is about $100,000 less expensive for comparable entry level configurations, and the difference gets larger with bigger systems.

Don't overlook our software.

Despite what might seem to be a total emphasis on hardware, the fact of the matter is that we spent more development money on software than on hardware. Briefly, here's our software list: Virtual Operating System (VOS), Data Management System, CRT oriented command language, Cobol, Basic, PL/I, Networking using X.25, IBM Communications, full-screen editor, symbolic debugger, and a complete Word Processing package.

If your application requires total reliability, if you are considering any kind of dual-processor configuration or if you're considering Tandem, then you should fill out our coupon or call Nick Bologna, Director of Product Marketing, 617/653-1466.

Stratus Computer, Inc.
17 Strathmore Road, Natick, MA 01760

Name _____

Title _____

Company _____

Type of Business _____ Phone _____

Address _____

City _____ State _____ Zip _____

Stratus
CONTINUOUS PROCESSING™

Do You Know Where Your Vegetables Are?

SALINAS, Calif. — The salad days of computing have come to "America's Salad Bowl."

With 900 cost and profit centers and 18 different ways of paying employees, Hansen Farms bought an IBM System/34 to keep track of its sprawling vegetable farm here.

Hansen Farms' primary product is iceberg lettuce, the foundation of any good salad. But they do not stop there; they grow other types, such as red leaf, green leaf and butter lettuce.

And a pretty fair salad bar could be created with Hansen Farms' other products — such as carrots, endives, green and dry onions, cauliflower, spinach, celery and chili peppers.

The cost of growing each product varies greatly, a spokesman said. These costs include land preparation, planting, cultivating, pest control, fertilizer and harvesting.

'Salad Bowl'

Most of Hansen Farms' acreage is in the "Salad Bowl" — the rich Salinas Valley near the Monterey Peninsula south of San Francisco. But it has fields in other areas of California, such as Bakersfield, Blythe and the Imperial Valley.

"Labor costs fluctuate from field to field," the spokesman said. "Some products require minimal labor, such as potatoes, which are mechanically planted and harvested. The opposite of that is celery, which is transplanted by hand and hand harvested.

"The labor costs differences between two products such as these will be extreme," he added.

"Payroll poses a real challenge," the spokesman explained. "We pay people 18 different ways."

Some employees are paid a piece rate, others are paid by the hour or are on salary. Piece rates vary by job and by product.

Employees who tie leaves over the cauliflower to screen it from the scorching sun are paid by hundred-foot sections. Cauliflower harvest crews are paid by the hour, the firm said.

This is where the IBM computer has proved vital to Hansen Farms.

"We have to keep track of 900 cost and profit centers (roughly 20-acre fields)," the spokesman said. "That's why we needed the System/34. We needed a lot of memory storage capacity."

Many Applications

Hansen Farms uses the System/34 and four terminals for a variety of functions, such as general ledger, payroll and accounts payable. The system is also used for detailed cost and profit analysis and to get timely, accurate information on how much it costs to grow specific crops.

Another firm markets Hansen Farms' vegetables and feeds daily sales summaries into the System/34.

Hansen Farms has had the System/34 since late 1979.

Recently, three of the country's largest retail shoe chains selected Racal-Vadic modems for their Point Of Sale systems.

You see, Ma, many of the new P.O.S. terminals operate at 2400 bps; twice as fast as older 202-based systems. And, being synchronous, throughput is increased another 30% since start/stop bits aren't transmitted. This adds up to a big savings in line costs.

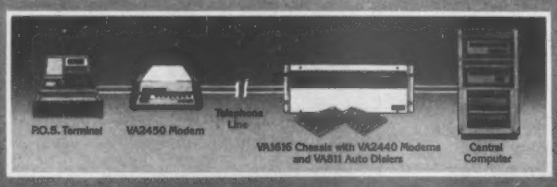
The retail stores install the VA2450 modems. They're compact, low profile and the telephone can sit on top, conserving space. An important feature of the VA2450 is the VOICE/DATA/MANUAL switch on the front panel which eliminates the need for a special telephone. During the day, the switch is positioned so the phone can be used for normal incoming and outgoing voice communication. At night, when rates are lower, the modem is engaged so the central computer site (using the VA2440 modem and VA811 dialer) can poll each retail store collecting sales, inventory and other data.

Up to eight VA2440 modems and VA811 auto dialers can be mounted in Racal-Vadic's 7-inch high rack chassis. The auto dialer(s) operate either in a singleline mode (one modem per dialer) or in Racal-Vadic's exclusive Multiline configuration where up to 60 modems can be accessed from a single RS366 or RS232C computer port. That's a tremendous savings in space and hardware.

When you sum it all up, Ma, Racal-Vadic modems are a real "shoe-in" when it comes to Point Of Sale systems for any business or industry.

Your independent thinking son,

Alexander Graham Jr.



Racal-Vadic Member IDCMA RACAL

222 Caspian Drive
Sunnyvale, CA 94086
Tel: (408) 744-0810 • TWX: 910-339-9297

PHONE: 800-543-3000, OPERATOR 335

Racal-Vadic Regional Offices: West (408) 744-0810 • East (301) 459-7430 Central (312) 932-9268 • Northeast (617) 245-8230 • Southeast (617) 277-2240

Available from these stocking reps...

Supreme Court Rules in Favor Of WP System

WASHINGTON, D.C. — A $1-million word processing system is a primary tool for the U.S. Supreme Court in the battle to efficiently process legal documents.

Court opinions, law clerk memoranda, opinion drafts, headnotes, speech texts and correspondences are all handled by the electronic editing system from Bedford, Mass.-based Atex, Inc.

Law clerks and secretaries are the primary system users, according to a spokesman. However, at least two of the nine Supreme Court justices have also reportedly been trained to use the system.

Justice John Paul Stevens and Byron R. White are supposedly using the electronic editing system to prepare documents. The other seven justices still fall back on manual methods to prepare information, he said.

There are a total of 65 terminals in the court. Each of 32 law clerks and all of the justices' secretaries has a terminal, according to James Donovan, the court's director of data systems.

$46K

The new low price of high-performance business computing.

The HP 3000 Series 40 SX.

Now, for little more than half of what you'd expect to pay for a high-powered business computer, you can get the new HP 3000 Series 40SX from Hewlett-Packard.

Consider the advantages:

- power to accommodate users at up to 56 terminals, each doing everything from word processing to data entry to business graphics.
- a simple, direct growth path to expanded configurations and higher performance models.
- a compact, pleasing design that fits easily into the office environment.
- easy-to-use features that will make your users feel comfortable after just a few hours training.

But the Series 40SX doesn't stop there. As a compatible member of the HP 3000 family, it has all the features managers need to help them do their jobs better. Need yesterday's sales figures right away? That's the job of our award-winning data base management system. How about getting critical information from computers in other locations? No problem with the 3000's advanced communications links. Even if the other computer is your IBM mainframe.

Less in. More out.

That's the benefit of our new RAPID/3000 programming tools—a "software shortcut" that helps you get your jobs up and running on the Series 40SX in a much simpler, quicker way. Up to ten times faster in some cases. But the same software also makes it easy for managers to create their own ad hoc reports—a few simple keystrokes is all it takes to call up the information they need.

Read all about it.

For more information, send for our new brochure on the HP 3000 Family. Write Hewlett-Packard, Attn: Bob Bond, Dept. 03123, 11000 Wolfe Rd., Cupertino, CA 94015. Or if you'd like to see our systems in action, call 800-227-9750 (in California call 415-857-7257) for the date and location of the Productivity '82 Seminar coming to your area.

HEWLETT PACKARD

Included for $46K is a system processor with 256 Kb memory, 4 terminal ports, the HP 2382 terminal and 27 Mb of disc storage with cartridge tape backup. 47205

Invalid's Parking Tickets Blamed on DP Error

By Lois Paul
CW Staff

BOSTON — A data processing error apparently has caused at least 20 parking tickets to be issued to a woman here who not only turned in her registration plates eight months ago, but who also suffered a stroke in November that left her unable to walk, let alone drive.

Genevieve A. Brown began receiving parking notices in late summer, according to her husband, David, although she turned in her registration plate to the Massachusetts Registry of Motor Vehicles in April 1981.

She has received additional notices as late as Jan. 10, he continued, although he knows his wife's license plate was issued to another woman in July 1981. The car itself has been sitting in the Brown's backyard since April.

The problem seems to revolve around a change in the law in September 1981, which took parking tickets away from the courts and gave the responsibility for them to cities and towns. This apparently has caused a lot of confusion at the Registry of Motor Vehicles, which has had to deal with a backlog of tickets.

Bryan Maranhao, program director of Boston's Office of the Parking Clerk, said his office was a step ahead of the new law, as it arranged in May to replace the Boston Municipal Court as the collection agent for the city. Since then, his agency has been contracting with Datacom Systems Corp. in New York for data processing services.

The problem in the Brown case was the use of old data to obtain the offender's address, a Datacom spokesman speculated.

When a ticket is written in the city of Boston, a copy is sent to Datacom for entry via key to disk to its data base. The Datacom system then checks the license plate against a file tape it purchases from the Massachusetts Registry of Motor Vehicles. Maranhao said this tape can sometimes be four to five months out of date.

Maranhao assumes the Brown case involves either a keypunch error or a registry file error. Apparently, Genevieve Brown's old license plate was being ticketed, but it was no longer on her car. However, when matched with an out-of-date registry list, her address was coming up and the tickets were mailed to her.

Quoted in an article in the *Boston Herald American* on Jan. 14, Maranhao offered to handle the matter if the paperwork were brought to him. "The Browns never talked to me directly," he said "The offer is still open. Bring it to me and I will make it go away if I can."

David Brown's response is that he sent the material to Maranhao's office three times and the matter still has not been resolved.

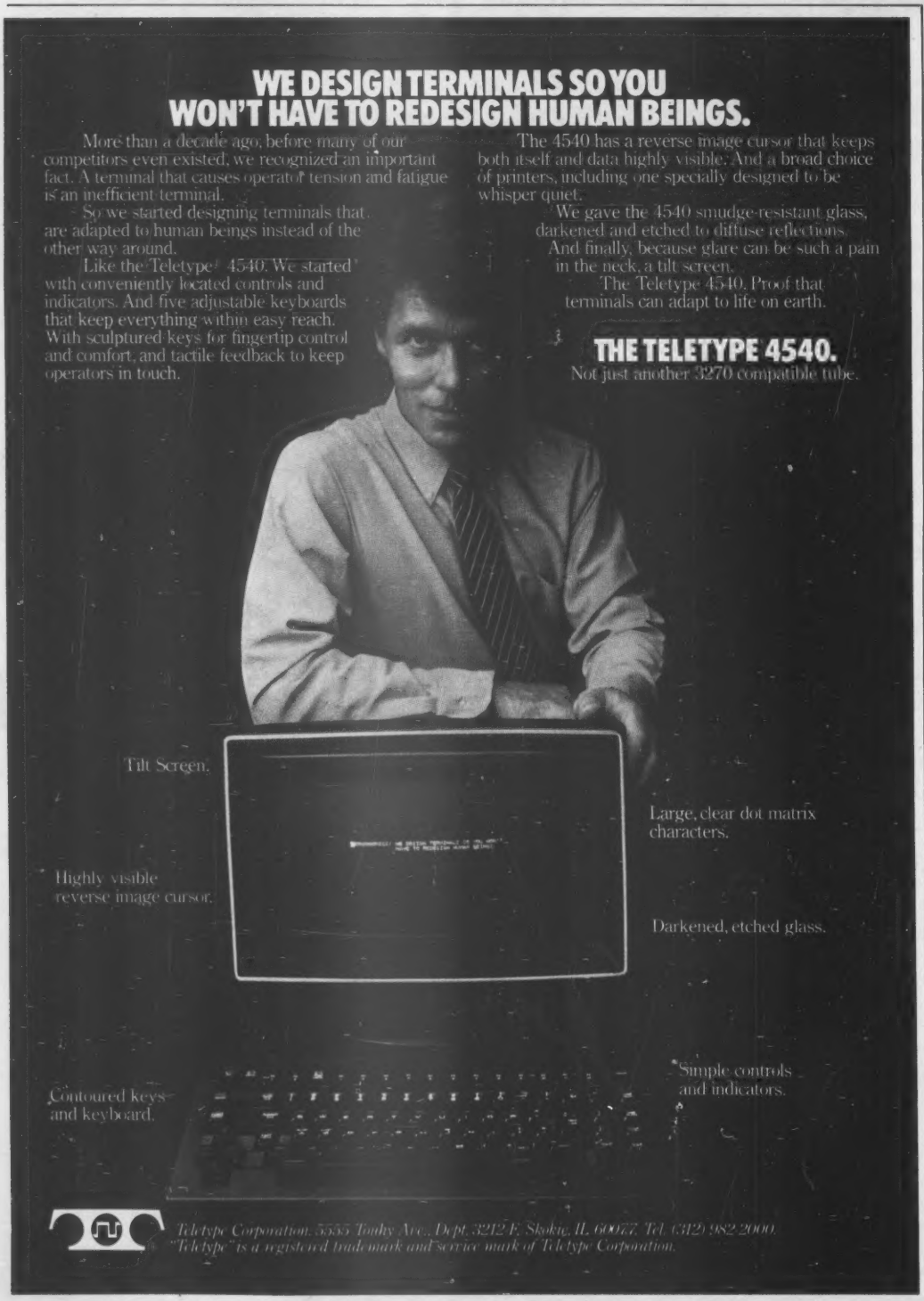
The matter may be resolved soon, in any case, according to the Datacom representative, who said his firm just purchased the latest tape from the Registry of Motor Vehicles. "We will have it up and running by next Monday," he said, noting that his office will run another check of the offender's license plate against the registry's tape of names and addresses of car owners.

Enormous Backlog

Datacom inherited an enormous backlog when it took over the handling of parking violations in May. All of the back tickets had to be entered.

"There are going to be errors," the firm's spokesman said, noting that the summer was a difficult time with the law change. However, Datacom has built data entry quality control programs into its system. The firm is responsible for issuing all notices and handling payments.

Its computer equipment consists of two National Semiconductor Corp. mainframes at its DP center in Elmsford, N.Y., and Four-Phase Systems, Inc. equipment in the field for remote job entry and handling of "boot and tow" activities. The equipment is tied into terminals at City Hall and is run by proprietary software.


WE DESIGN TERMINALS SO YOU WON'T HAVE TO REDESIGN HUMAN BEINGS.
More than a decade ago, before many of our competitors even existed, we recognized an important fact. A terminal that causes operator tension and fatigue is an inefficient terminal.
So we started designing terminals that are adapted to human beings instead of the other way around.
Like the Teletype® 4540. We started with conveniently located controls and indicators. And five adjustable keyboards that keep everything within easy reach. With sculptured keys for fingertip control and comfort, and tactile feedback to keep operators in touch.
The 4540 has a reverse image cursor that keeps both itself and data highly visible. And a broad choice of printers, including one specially designed to be whisper quiet.
We gave the 4540 smudge-resistant glass, darkened and etched to diffuse reflections.
And finally, because glare can be such a pain in the neck, a tilt screen.
The Teletype 4540. Proof that terminals can adapt to life on earth.
THE TELETYPE 4540.
Not just another 3270 compatible tube.
Tilt Screen.
Large, clear dot matrix characters.
Highly visible reverse image cursor.
Darkened, etched glass.
Contoured keys and keyboard.
Simple controls and indicators.
Teletype Corporation, 5555 Touhy Ave., Dept. 3212-E, Skokie, IL 60077. Tel. (312) 982-2000.
"Teletype" is a registered trademark and service mark of Teletype Corporation.

Increases Accuracy

Component Supplier Logs On In-House

CHATSWORTH, Calif. — A computer components supplier without its own in-house computer may be something of an anomaly — but it does happen.

Tandon Corp. here makes floppy and hard disk drives and recording heads for the OEM market. The units are usually included in mini and micro systems.

The firm's DP manager, Larry Haftl, explained that from a business standpoint the firm was doing well — too well.

"We found ourselves in a situation where the work load per person was doubling each year. This meant the work load was increasing faster than our ability to hire and train people to meet it. It was not unusual for 20% to 30% of the staff to still be working at 9 p.m. We had a serious information lag and a high error rate. All of our projections showed we needed a computer," Haftl said.

While Tandon did not have a computer, company administrators had given the idea some thought and set down some guidelines. Top company brass gave software first priority and were looking for a system that was easy to use.

Software Came First

Haftl found the software first. It consisted of two packages called Manman and Finman from ASK Computer Services, Inc. Manman is a manufacturing materials planning package and Finman is a financial and accounting package.

The software was designed specifically for a Hewlett-Packard Co. HP 3000 processor. Consequently, Tandon bought an HP 3000 Series 33 with 512K bytes of memory, Haftl said.

Manman was utilized in the development of a manufacturing resources planning system. It is used to predict future work load in terms of materials and labor. The software helps Tandon to cut costs and meet customer order demands, according to Haftl.

Currently, Tandon's inventory control, capacity planning and scheduling are all handled by the HP hardware. A special labor program that will be integrated into Manman is now being developed, Haftl said.

Finman consists of three packages. One handles order entry and accounts receivable. Another handles accounts payable and the third provides general ledger processing. The first two packages tie into Manman, and all the software ties into the general ledger package, Haftl explained.

"The interactive capabilities provided by the HP 3000 and the software have helped us solve two problems. We have been able to train personnel and have them working in a much shorter period of time, and we have cut our error rate considerably." Haftl explained the latter accomplishment was a result of eliminating the need to transfer data back and forth from one program to another.

The firm also uses 24 HP 2621A terminals, two HP 2635 printing terminals for producing special forms and an HP 400 line/min printer. In addition, Tandon's configuration includes three HP 7970E disk drives with 120M bytes of memory and a 1,600 bit/in. tape drive. The firm recently installed an HP 3000 Series 44 to support its remote sites and is linked to the Series 33 processor at corporate headquarters using HP DS/3000 software, Haftl said.

The Series 33 processor was initially used as the "memory and nervous system of the company," Haftl said.

After accessing the program, the software directs the clerk through the firm's business process. The programs check each other to determine whether a part was received. If not, the invoice is flagged until the situation is cleared up. If it has been received, the processor accepts the invoice, Haftl explained.

At the end of the week, the accounts payable program is run and the processor automatically prints out checks. The same accounts payable entry is also cross-checked for inventory and production scheduling.

With the general ledger package, the firm has increased the level and accuracy of interdepartmental information. The system gives advance notices of stoppages, missed billing schedules and irate customers. It also gives advance notice of due dates and will flag a late delivery, Haftl said.

New Marketing Concept

VAX Vouchers™

Guaranteed 43% return on investment.

It's a flood. It began in 1978 and has been rising ever since.

The flood is software packages for the VAX computer family. There are a few good values among them—but watch out. There are also a lot of duds, especially among data-base management software.

You may already have one of these DBMS's installed on your VAX computer. If you do, you're familiar with some of their many problems: poor documentation, slow execution times, and limited data-base functionality. Above all, you also see user-level features that remind you of the early days of interactive computing.

The cause of these problems is easily explained. Soon after DEC announced the VAX, several companies noticed a great opportunity and rushed to market with their DBMS software. Some of them quickly converted their products to the VAX from other hardware. A few others took their academic research projects and tried to make them viable commercial products. If only good data-base software could be created so easily!

We took a fresh approach. Our years of experience in commercial data-base systems taught us what we and other companies had done well and had done poorly. VAX users in the 1980's, we reasoned, deserved and wanted better than the software flaws of the 1970's. So we decided to design and implement a completely new data-base system. We hired a large team of experienced software designers and documentation writers. And we spent three solid years designing and documenting our software from the ground up.

In 1982, you will see the results of our work—a DBMS for the 1980's. Whether you're a research scientist, a corporation executive, or a novice, you can immediately use our DBMS productively from your terminal. Even in the middle of a command, you can access our online documentation without opening our users manual. If you're a programmer, you can also use our DBMS from any language that supports the VAX/VMS procedure-calling standard —languages such as FORTRAN, COBOL, MACRO, BASIC, and PASCAL. And we have not sacrificed performance for usability. We exploited the unique architecture of the VAX to give you the fast execution times and throughput that will not appear in other software for years to come.

YOU PAY FOR THE ADVERTISING

Display advertising is not cheap. Just telephone the advertising department of this publication to find out the cost of an advertisement this size. Yet advertising space is only a fraction of the cost of an elaborate promotional campaign. Include glossy literature, a large, expense-account sales force, trade show promotions, and the like and the costs quickly become staggering. Unfortunately, you pay for all of this when you buy a heavily-promoted product.

We want to avoid these expenses, and we will pass on most of our savings to you.

OUR UNIQUE OFFER

If you own a VAX computer, or if you have one on order, send us the coupon below. This puts you on our exclusive and confidential mailing list. We will keep you posted on the progress of our software development and testing. Then three weeks before we formally announce and release our DBMS, we will send you the announcement with our descriptive literature.

But that's not all. In exchange for your coupon, we will send you a voucher worth $12,000 towards the purchase of our software. That's right—$12,000! The voucherless, without exception, will pay $40,000 for our DBMS software. With a voucher, you will spend only $28,000 for software worth at least $40,000—a respectable return on investment of 43% in these inflationary times.

When we release our DBMS, you will have at least six weeks to test it, at no charge, on your VAX computer. Compare and benchmark its speed and flexibility against other software that you already have or are considering for purchase. Decide risk-free whether indeed it is worth its $40,000 price, let alone your low price with your voucher.

The voucher comes with your company's name on it and it is not transferable. Therefore, the information that you list on the coupon must be accurate and complete. The voucher expires two months after we formally release our software, so you will have to act promptly when we notify you of the release date.

Of course, we may still spend some money to market our software to those of you who do not respond to our voucher offer. But by that time, we hope to have quite a large mailing list as a result of this advertisement, so we will have to advertise very little.

We have chosen to remain anonymous until we release our DBMS. Otherwise your many telephone inquiries would seriously distract us from our development work. We also want to test our marketing concept and prove that VAX owners are value-conscious in their software selection. Despite our anonymity, we can assure you that we are a respected company with substantial assets and an excellent reputation for software expertise and customer service.

The DBMS software for the 1980's is almost here. Participate risk-free in its exciting release. Send in your coupon with no obligation, today.

©1981 by VAX Vouchers

VAX Voucher Coupon

Please send me my $12,000 VAX Voucher and put me on your mailing list. This places me under no obligation to test or purchase your DBMS software. You will not give or sell my name to anyone; you will use it only to inform me about your DBMS release. No salesman will call me unless I request otherwise.

Name _____

Title _____

Company _____

Address _____

_____

City _____

State/Prov. _____ Zip/PC _____

Country _____

Telephone _____

Mail this coupon to: VAX Vouchers
P.O. Box 2065
Framingham, MA 01701
USA

☐ Operating system (circle one): VMS, UNIX, other.

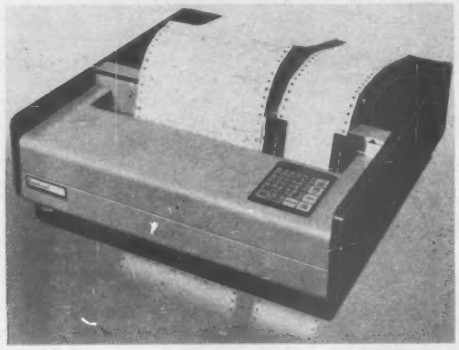
☐ We have ____ VAX 11/780's and ____ VAX 11/750's installed.

☐ We have ____ VAX 11/780's and ____ VAX 11/750's on order.

☐ I have none installed and none on order, so I am not eligible to receive a VAX Voucher, but please put me on your mailing list anyway. My hardware is _____

Cardinal 2170

High Speed Dot Matrix Data Printer



- Five paper drive combinations including top or bottom tractor drive and individual forms handler.
- 200 cps.
- 9-pin ballistic print head, 650 million character life.
- Near letter-quality print at 100 cps.
- Heavy-duty industrial design.
- Five-input interfaces available.

Cardinal's new 2170 is a rugged performer, tough enough to take anything a factory environment can dish out... yet sophisticated to the point of engineering genius.

Unlike many of today's data printers, the 2170 is available with bottom tractor feed. This enables an operator to remove a form immediately after the last line is printed.

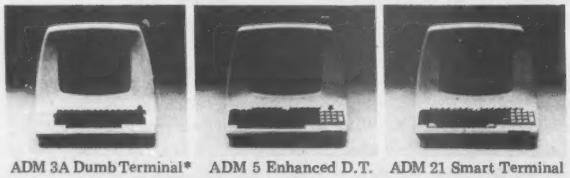
Self diagnostic and signature analysis are built right into the 2170 too. This makes troubleshooting as simple as flipping a switch.

Write for more information today.

Cardinal COMPUTER DIVISION

Another of the Cardinal Industries
P. O. Box 151 Webb City, Missouri 64870 U.S.A.
Phone (417) 673-4631

When you say "Uncle" say it to MTI. AUTHORIZED DISTRIBUTOR



ADM 3A Dumb Terminal* ADM 5 Enhanced D.T. ADM 21 Smart Terminal

ADM 31 Sm. Intermediate ADM 36 DEC System Term. ADM 32 Sm. OEM Expand.

MTI has Lear Siegler's complete family of dumb and smart terminals in stock, ready for delivery. These terminals are loaded with the features you want at prices you can afford. No need to wait any longer. Say "Uncle" at MTI and save.

MTI is your one source for all the terminals, peripherals, systems, applications expertise and service you will ever need. And whether you buy, rent or lease, you'll find our prices hard to beat. Call us.

New York: 516/482-3500, 212/895-7177, 518/449-5959
Outside N.Y.S.: 800/645-8016
New Jersey: 201/227-5552
Ohio: 216/464-6688

mti

Applications Specialists & Distributors, New York, New Jersey and Ohio. Intel, Texas Instruments, DEC, Dataproducts, Lear Siegler, Hazeltine, Diablo, Teletype, Racal-Vadic, Anderson Jacobson, General DataComm, Digital Engineering, Techtran, Cipher, Priam, SMS, Western Peripherals, Epson, Able Computer, Elgar and 3Com.

*Dumb Terminal is a registered trademark of Lear Siegler Inc.

Oil Firm Strikes it Right With Expandable WP Tool

FAIRFAX, Va. — When Mobil Oil Corp. moved its U.S. Marketing and Refining Division headquarters here in 1980, it implemented a word processing system that was right for the time and easily expandable for the future.

The implementation team had about 18 months lead time, according to a company spokesman. As a first step, from February through October 1979, the team studied the 12 departments slated to move to Fairfax. Team members spent 10 days interviewing all of the secretaries and at least 20% of the principals in each department. The purpose was to identify the kind of work being performed and the equipment they were using, including word-processing-related activities and devices. Based on statistics gathered from approximately 400 interviews, the team recommended configurations of terminals and printers to match the work load in each area.

Once the departments had accepted the recommendations, Mobil requested bids from three major word processing vendors. "By this time we had made a decision that we wanted shared-logic systems, as opposed to stand-alone systems," said Bob Corkum, the division's word processing coordinator. "We also wanted to consider companies large enough to support our ongoing business needs."

Key Elements

Mobil was looking for 16 characteristics in a vendor. Key elements were ease of use and system cost, as well as customer support and the vendor's ability to deliver against a schedule. Timely delivery was critical, since the target period for the move covered only two months. For the equipment itself, a checklist detailed 54 required text editing functions, including glossary. Systems from Wang Laboratories, Inc. met more of these functions at that time than any of the others investigated.

Mobil ordered five Office Information Systems (OIS) — four OIS 140, Model 1 text processors, each with a 26.9M-byte system disk and an OIS 125 with a 5M-byte disk. Peripherals included 30 CRT terminals, 19 archiving workstations and 32 daisy-wheel printers. Interfaces for photocomposition and optical character recognition (OCR) scanning, as well as an extra disk drive, were added.

The next steps for the firm were to coordinate planning for word processing sites with office and furniture design and to make sure that power and cabling requirements were met. The installation team helped the departments plan equipment layout so that blueprints could be drawn up by the interior designers in charge of furniture. Meanwhile, over 20 miles of cable from the ground-level computer room was installed throughout the building.

The final task of setting up the word processing system began in May 1980 as support personnel began to move the equipment from the warehouse off-site to the office building. "We went through a period of about four weeks in which we tested 125 pieces of equipment," Corkum recalled. "Only eight required any work." Each unit was checked twice — first by Wang engineers and then again by Mobil personnel — before it was installed in its permanent location. A final test during the weekend prior to each group's arrival helped to ensure that employees had a smooth start in their new place of work.

Smooth Transition

Planning for a smooth transition also meant making sure new secretaries knew how to use the equipment. The division solved this problem by hiring new office employees two weeks early. The installation team set up a training room with 16 terminals and several printers and then conducted a week-long word-processing course. A second week of training focused on Mobil office procedures. Eighty operators were trained in all the basics of Wang word processing and when they came in that Monday to go to work, they were ready to go. By virtually all accounts the move was successful, according to the company spokesman.

The division's approach to word processing gives great flexibility to system users, he maintained. Easy access to the cable network — laid out when the building was still under construction — allows departments to move existing equipment or add new peripherals as required. Usage of the central processors and disk drives is centrally controlled; individual departments, however, retain full control over their workstations and printers.

Office layout and distribution of equipment is tailored to each department's special needs, he explained. In the marketing department, for example, almost 50% of the building's word processing gear is spread over two and a half floors. Five clusters with up to four workstations and three printers each, plus two single terminals with printers, were set as islands in an open office space.

The Office of General Counsel combined four workstations and two daisy printers into a word processing center installed in an enclosed area. Dedicated operators handle all original typing and revisions. The Office of Patent Counsel chose the same basic configuration, but added an OCR scanner.

Other departments use varying combinations of small clusters and satellite workstations. Planning and Technology and the Controller's Office, for example, share three terminals and two printers. Each department has at least one archiving workstation so that documents can be transferred quickly to diskettes for storage.

In planning for a flexible system, the word processing team left ample room for growth and laid foundations for new uses, the spokesman continued. Of the 190 cables laid throughout the building, slightly more than half were spares. System expansion has already started; 19 additional workstations and 10 printers will be added over the next few months, he said.

SAY UNCLE.

ADM 3A DUMB TERMINAL®

- The original Dumb Terminal
- Full or Half Duplex up to 19.2K Baud
- 1920 Characters in 24 rows of Characters
- RS232C Gated Extension Port
- Direct Cursor Addressing
- Over 200,000 in use

ADM 5 ENHANCED DUMB TERMINAL®

- All ADM 3A Features Plus:
- Reverse Video, Reduced Intensity or Combination of Both
- Limited Editing with Erase to End of Line/Page
- Gated Extension Port
- Integral Numeric Keypad
- Individual Cursor Control Keys

ADM 21 SMART TERMINAL

- Conversation, Block Mode Operation
- 8 Shiftable Function Keys
- Full Editing/Visual Attributes
- Printer Port
- X-On/X-Off Transmission Control
- International Character Sets Available
- Popular Terminal Emulations Offered

ADM 31 SMART TERMINAL

- Two-Page Display Memory
- Buffered Printer Port
- Full Editing/Visual Attributes/Business Graphics
- Polling
- Dynamically Modifiable Personality
- Optional 25th Line/Smooth Scroll/X-ON, X-OFF/ Programmable Function Keys

ADM 36 DEC SYSTEM TERMINAL

- ANSI Standard
- 80 or 132 Column Display
- Jump or Smooth Scroll/Split Screen
- Non-Volatile Set-Up Mode Using "English" Prompts
- Non-Embedded Visual Attributes
- Selectable International Character Sets
- Shown with Optional 15" Monitor

ADM 32 OEM EXPANDABLE SMART TERMINAL

- Optional Integral 300/1200 Baud Modem with Auto Answer, Auto Dial, Keyboard Programmable
- Optional Polling
- 2 Pages of Memory/25th Line
- Full Editing/Visual Attributes/Business Graphics
- Programmable Function Keys
- Jump or Smooth Scroll

Until now there's been quite a war going on over prices and features in the terminal industry. Until now, that is—the competition just lost, hands down.

For years, Lear Siegler has set the standards of the industry. Dumb and smart. And the competition has worked hard to imitate them.

But these new prices and performance features are the toughest standards anywhere. Bar none. So it's back to the drawing boards for everyone else in the industry.

Meanwhile, Lear Siegler is featuring a complete family of low priced, high performance terminals with attached or detachable selectric keyboards, white or green screens, Dumb or smart.

The detachables offer extra memory and accept an extra board for speech, graphics, modems, controllers or additional memory. Options include 15" screens and a convenient tilt mechanism.

So if you've been holding out, waiting for the right prices and features, give in.

Say uncle. Say Lear Siegler.

LEAR SIEGLER, INC. DATA PRODUCTS DIVISION

INCREDIBLE PERFORMANCE, INCREDIBLE PRICES.

Lear Siegler, Inc., Data Products Division, 714 North Brookhurst Street, Anaheim, CA 92803. Attn: Adv. **Regional Sales Offices:** San Francisco 415/828-6941 • Los Angeles 213/454-9941 Chicago 312/279-5250 • Houston 713/780-2585 • Philadelphia 215/245-1520 • England (04867) 80666. *From the states of CT, DE, MA, MD, NJ, NY, RI, VA and W.V. call (800) 523-5253.

Dumb Terminal is a registered trademark of Lear Siegler, Inc. Quantity One U.S. Prices

Tailored to Meet Needs

Parent Picks Package for Operating Companies

GIN, Ill. — When Katy Industries, a holding company here, decided to computerize some of its small- to medium-size companies seven years ago, the decision whether to develop software in-house or to buy packages depended on what would best meet its design specification.

According to the firm's assistant treasurer, William Anderson, these were the specifications to be met:

- Flexibility to meet transaction volume and data storage requirements in a range of small- to medium-size businesses.
- Solid nucleus software easily modified or enhanced to provide for the various operating and management needs of different companies.
- Data base management capabilities with independence of programs and data to reduce the future impact of changing requirements.
- A powerful information retrieval/reporting capability that could be easily used in a de-skilled environment.
- Relative ease of use with minimum training for non-DP personnel.
- A modular growth capability without conversions or changes in programming or procedures.

"Our objective was to have software that provided an 80% fit for all the companies with only 20% modified or customized to suit an individual company's operating needs," he said.

After an intensive investigation of more than 15 competing alternatives, the firm decided on Microdata Reality hardware as the best for meeting its design specifications.

SMI Package

Anderson said his company worked closely with Systems Management, Inc. (SMI) of Rosemont, Ill., to develop a manufacturing control system software package. In addition, it purchased rights to use the distribution/accounting package that SMI had developed.

"These two software packages provided a complete and fully integrated, but modular, operating system. They have proven to be easily tailored to fit individual company requirements.

The quality of the packages and the availability of manufacturing and systems professionals at SMI enhanced our decision. That was seven years ago. Today, the packages are mature and the results have been phenomenal," according to Anderson.

Anderson estimated that it would have cost more than $500,000 to develop the software in-house and "we probably would not have developed as complete and as modular a package, nor would documentation be as complete."

He added that the all-inclusive arrangement that was worked out with SMI saves Katy $50,000 to $100,000 with each additional installation. Working with SMI, Katy's total package software cost was under $50,000.

Real Savings

"But to me, the real savings was and is in time," Anderson admitted. "The easily tailored software, which meets our design objective of an 80% fit, enables us to bring applications up quickly.

"We save a couple of years whenever we bring up another system for one of our companies. The effect of this time-saving on our bottom line is profit — as much as $100,000 to $500,000 per year — two to three years sooner and with much lower front-end investment in dollars and people."

The packages also are used as a shortcut to specifying tailoring requirements, he noted.

"It is much easier to have small company managements relate to something they can see than to the abstract. Thus, new installations need little adjustment/fine-tuning after implementation," according to Anderson.

Announcing. . .

The ONE Alternative In Financial Software

Strategic Software represents a dramatic breakthrough in financial application software. It features sophisticated, high technology systems software paired with modular, streamlined applications. Strategic Software products are all fully interactive and integrated. From a terminal, a user can interactively tailor our systems to accommodate his unique and changing requirements.

Strategic Software is the base for our Integrated Interactive Financial Systems (II/FS) family, which includes:

- PURCHASE ORDER
- ACCOUNTS PAYABLE
- GENERAL LEDGER
- MATERIAL MANAGEMENT

Strategic Software applications offer the user-friendly simplicity of a personal computer, with all the power of a large scale system.

INTERACTIVE Your business operates in real time, so you need interactive financial applications. Walker's fully interactive transaction processing systems naturally complement your business and make your organization work better. Data errors are detected and corrected at the source. Immediate update makes information timely. Interactive systems provide better management control by putting the power of your computer directly into your business functions.

INTEGRATED With Strategic Software, each application in the entire product line is inherently integrated.

UNIQUELY YOURS Walker's Interactive Systems Customization Facility (ISCF) overcomes the inflexible characteristics of earlier packaged software by allowing you to easily tailor and configure the system online, from your terminal. For example, screen formats, reports, processing rules, data validation requirements, and documentation can be changed, without reprogramming.

PORTABLE Our modular Cobol application programs are transportable across many computer hardware, T/P monitor, and DBMS environments, including:

- IBM 370/303X/4300
- VSAM, IMS/DB, DL/1, ADABAS, IDMS
- HP 3000
- IMS/DC, CICS, SHADOW II, CMS

BEWARE OF OBSOLETE SYSTEMS Today, all systems are online. But your financial people become only keypunchers with online data entry. With online query, you're limited to reading batch reports from a terminal. Get the computer to work for you. Install Integrated Interactive Financial Systems so that you can tailor your system online.

1982 WINTER SEMINAR SCHEDULE Join us at a free seminar in your area and find out how you can improve your company's financial picture. Call (415) 495-8811 today to register.

EAST

ATLANTA
Hyatt Regency
Thursday, February 18

BOSTON
Boston Marriott Hotel
Tuesday, February 23

NEW YORK/NEW JERSEY
Meadowlands Hilton, Secaucus
Wednesday, February 24

PHILADELPHIA
Stadium Hilton Inn
Thursday, February 25

WASHINGTON, D.C.
Hyatt Regency
Friday, February 26

CENTRAL

CHICAGO
Hyatt Regency O'Hare
Wednesday, February 17

CLEVELAND
Marriott Inn-Airport
Tuesday, February 16

HOUSTON
Marriott-Greenspoint-Airport
Friday, February 19

WEST

ORANGE COUNTY
South Coast Plaza, Costa Mesa
Tuesday, March 2

SAN FRANCISCO
Hyatt at Union Square
Thursday, March 4

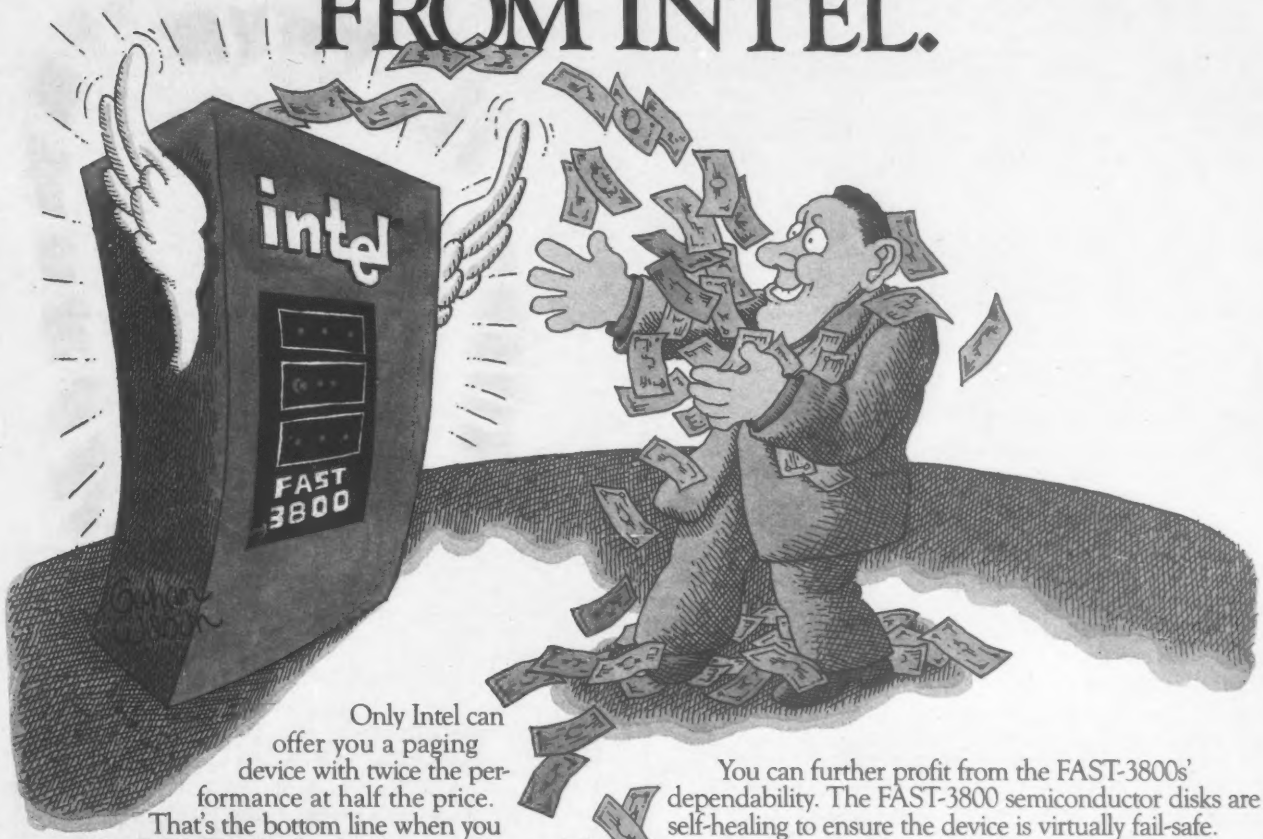
SEATTLE
Red Lion Inn
Wednesday, March 3

WALKER INTERACTIVE PRODUCTS

100 Mission Street
San Francisco, CA 94105

Telephone
415/495-8811

CACHE-IN ON FASTER PAGING PERFORMANCE FROM INTEL.



Only Intel can offer you a paging device with twice the performance at half the price.

That's the bottom line when you compare Intel's FAST-3800 family of semiconductor disk paging devices to IBM's 3880 model 11.

Here's how you cache-in on this great deal from Intel.

Unlike the 3880 model 11, Intel's FAST-3800s typically provide 100 percent coverage of page data sets. That means you get at least twice the performance. For less cash. Because the data sets are there—not out in another disk unit—when the CPU requests them.

You can also benefit from Intel's experience with the microprocessor. (We introduced it in 1971.)

The heart of the FAST-3800s is Intel's iSBC™ 86/12 single-board computer. The microcomputer selected by many major DP manufacturers for use in their systems. It is this high-performance microcomputer which other paging devices lack, that uniquely enables the FAST-3800s to either emulate a 2305 or run in VM Native Mode.

Or to perform under DOS/VSE or MVT/VSE* operating systems.

Or function as a data base assist processor with Intel's SYSTEM 2000® data base management system.

And even emulate various direct access storage devices. This adds up to greater performance from a microprocessor-based design. Where software compatibility is no problem.

You can further profit from the FAST-3800s' dependability. The FAST-3800 semiconductor disks are self-healing to ensure the device is virtually fail-safe.

As a matter of fact, a Northeast U.S. hospital equipment manufacturer says, "The FAST-3800 has not been down for even one second since its installation on our 4341 in August, 1981." Dependability is a key part of our performance.

If a problem should arise, Intel product service offices are located in some 60 U.S., Canadian and European cities.

Why pay twice the cash for half the cache? Contact Intel's Marketing Information Office at 800/531-5304. In Texas call 512/258-5171. Or return the coupon today.

intel® delivers solutions

Name _____

Organization _____

Address _____

City/State/Zip _____ Phone (___) _____

CPU/Operating system _____

Return to Intel Marketing Information Office, P.O. Box 9968, Austin, TX 78766.

CF

*Developed by Software Pursuits, Inc

Eliminates Computer Card System

On-Line CPU Reduces Registration Chaos

LARGO, Md. — One of the traditional hassles of college life is registration. But officials at a community college here think they have found the way to reduce its chaos.

Using an on-line mainframe, Prince George Community College has eliminated the computer card registration system that involved long lines and a two- to three-hour registration process. The system, an IBM 370/138, is being used to provide other school services as well.

"After enduring the rigors of traditionally hectic registration periods for many years, the college finally decided there must be a way to make the process more palatable to both students and administrators," recalled Carl C. Seldomridge, director of records and registration for the 19,600-student institution.

"The old method became chaotic when we tried to keep things moving during peak periods. Long lines were hard to handle. Because of the frantic pace at which our people had to work, we found when it was all over that our records were often incomplete and inaccurate," he said.

To solve the problem, the office teamed up with the school's computer science department to develop an on-line registration system, which centers around a student's financial records. The software allows the registration office to update all accounting and billing programs automatically. Students' bills are printed immediately after registration.

"We can handle 400 registrations a day comfortably. Classes run for different numbers of weeks and sign ups are thus staggered. And by urging students to make appointments for registration, we further reduce the flow at our counters," Seldomridge said.

When the work load exceeds the 400-a-day mark, the college can expand the on-line system by taking CRT terminals (IBM 3270s) from other locations to provide extra processing stations. The system can accommodate up to 103 terminals.

Turnaround Time

The system has allowed the college to offer 24-hour turnaround on registration-related output, including seat management reports that tell how many seats for a class will be filled. Class rosters are produced on command and on an on-line printer in the registration office the day before classes begin, Seldomridge said.

"Our records are more accurate than ever before," he added, noting that student grades are also available on-line.

The automated registration system was designed by the computer science department from the bottom up to help relieve the crush at registration and to allow users to better manage information during regular times. "We developed a scheme of debits and credits and assigned them to a student's financial record. We built in on-line controls to make sure our financial aid section can operate properly," explained Computer Science Director Dr. Tom L. Schwartz.

"Bad debts, library fines and parking fines may be entered on-line. If the records show these obligations have not been met, the student can be barred from registering," he said.

Old System

"Our old [manual] system was terrible. The registration process was usually a disaster. Sometimes it took five or six weeks to determine exactly how many people had registered during a certian period — by that time, the number of students actually attending classes could have changed. Now, such information is available instantly," Schwartz said.

The modernization of the registration effort was part of a long-range effort to use computer equipment as a means of offering better services to the community, according to Dr. Robert I. Bickford, president of Prince College.

John M. Wilson, dean of business affairs, said the registration effort was worth it. "Because of our size, we must always look for ways to handle growth efficiently, to streamline our operations and to provide quality education. However, we must do it on a cost-effective basis. The computer provides a means for cutting and avoiding costs and gives us a wider variety of services. It helps us keep the students we have and attract more," he said.

SPEED READING COURSE FOR HP-3000.

Dylon's Series Five can cut recording time in half on any HP-3000 computer system.

- Fully software compatible, uses existing HP software
- Dual density, 800/1600 cpi to 125 ips
- Disk back-up and start/stop flexibility

For details and specifications on how a Dylon system can help any HP-3000 series computer read and write faster, call us collect.

(714) 292-5584 **Available Now**

Dylon 9561 Ridgehaven Court, San Diego, CA 92123

Please send me more information on the Dylon Series Five.

Name_____

Company_____

Address_____

City_____

State_____ Zip_____ Phone_____

A Data Manager in Pascal for DEC

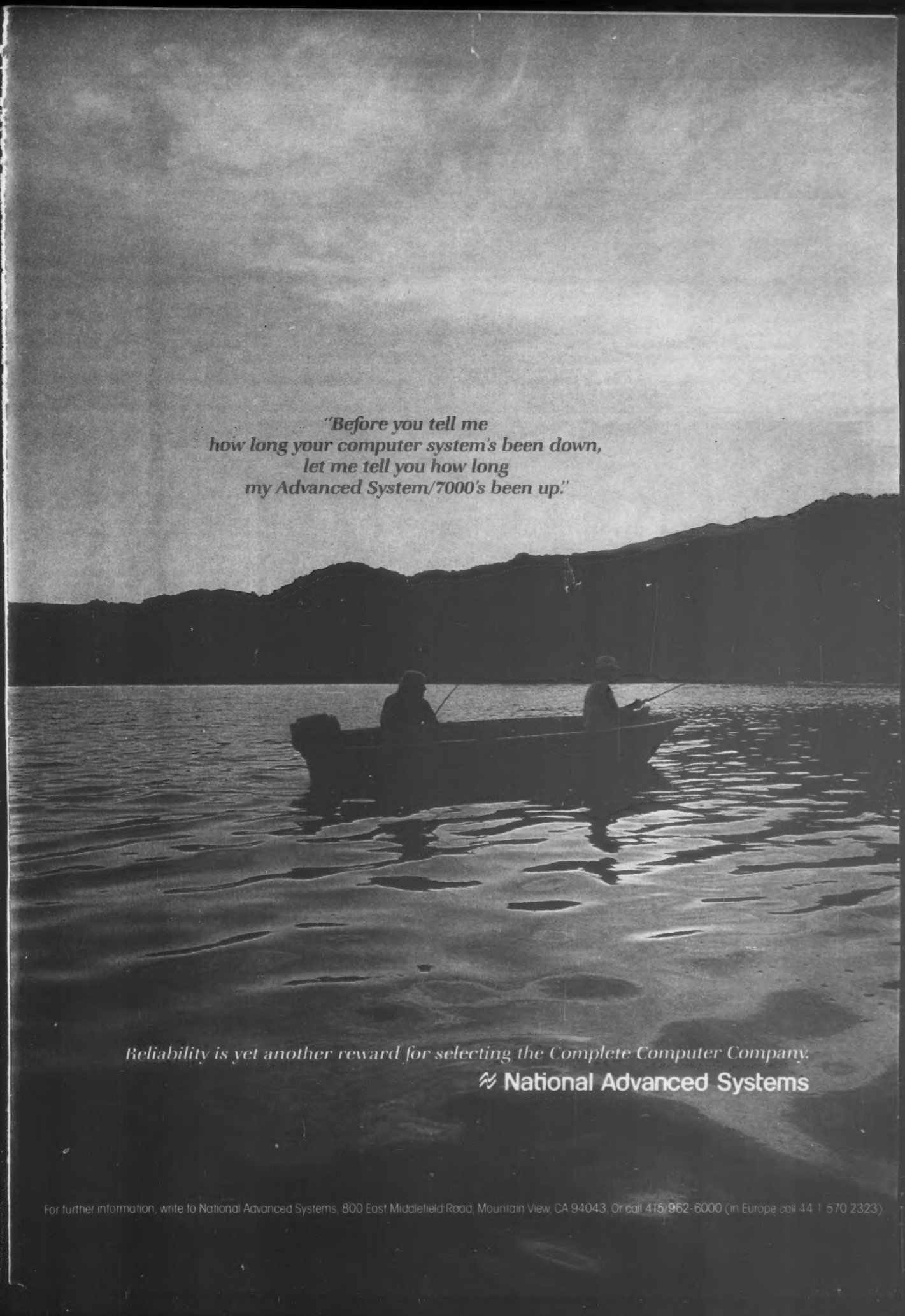
RDM™
REAL-TIME DATA MANAGER

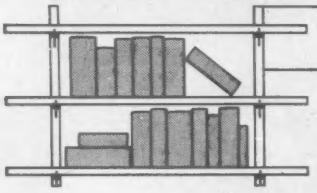
Providing for faster application programming with lower maintenance.

RDM version 2.1
- A general purpose application generation tool
- For use with RT-11, RSX-11M, RSTS/E or TSX-PLUS
- Over 150 Pascal program modules
- Oregon Software Pascal-1 Compiler
- Transportable across all the supported operating systems
- Easy to use Data Dictionary • Report generation tools
- Input form design facilities • Many other utilities

ITI INTERACTIVE TECHNOLOGY INCORPORATED
1225 Northwest Murray Road • Suite 103
Portland, Oregon 97229 • Telephone (503) 644-0111

Pascal-1 is a trademark of Oregon Software, Portland, Oregon. RT-11, RSX-11M, RSTS/E, and PDP-11 are trademarks of Digital Equipment Corp., Maynard, Mass. TSX-Plus is a trademark of S&H Computer Systems Inc. of Nashville, Tennessee. RDM is the trademark of Interactive Technology Inc. of Portland, Oregon.


"Before you tell me
how long your computer system's been down,
let me tell you how long
my Advanced System/7000's been up."
Reliability is yet another reward for selecting the Complete Computer Company.
National Advanced Systems
For further information, write to National Advanced Systems, 800 East Middlefield Road, Mountain View, CA 94043. Or call 415/962-6000 (in Europe call 44 1 570 2323).



Off the Press

OH! PASCAL!
By Doug Cooper and Michael Clancy

"Our book is aimed at students who, although otherwise sober and upright, seem to lack an intuitive feel for computer science." This statement from the authors' preface sets the stage for a highly readable and enjoyable book intended as a self-teaching introduction to programming and Pascal. The book equates programming to problem solving and emphasizes a variety of general problem-solving techniques. Procedures are explained early in the discussion to encourage modular design and well-defined algorithms, making it easier to tackle large-scale programs later on. Antibugging and debugging sections conclude each chapter, followed by self-check questions and self-tests. Both interactive and batch programming are addressed, and the index lists such items as "spaghetti program," "kludges," "quick and dirty," "stepwise refinement" and "snapshot procedures," reflecting the up-to-date language of the book.

A fun way to learn Pascal. Attractively presented chapters begin with delightful illustrations (ranging from *Star Trek's* Mr. Spock to Andy Warhol's Marilyn Monroe diptych) coupled with wry maxims. This is not the standard dry reference manual in tiny print; glossary provided.

Also of note: the feminine pronoun is used throughout, since "after hundreds of years of 'he' and 'his,' a few decades of 'she' and 'her' shouldn't bother anyone."

Paperback, 476 pages, $15.95. W.W. Norton & Company, Inc., 500 Fifth Ave., New York, N.Y. 10110.

PACKET SWITCHING
By Roy D. Rosner

A practitioner's guide to an important telecommunications technique. It is intended as both a learning tool and a reference for systems analysts, network planners, applications engineers, communications staff officers and anyone needing a working knowledge of design considerations, alternative techniques and configurations to meet present and future communications requirements. Because the book covers a broad range of viewpoints, a handy "roadmap" is provided to direct the reader to the chapter containing his area of interest.

The book describes existing packet-switched networks; switching technologies and their integration; topological designs; the common carrier marketplace; voice, video and facsimile transmission, in additon to computer data communications; and the X.25 protocol, in detail. A highly practical, applications-oriented treatment. Includes full glossary.

Hardcover, 371 papers, $34. Lifetime Learning Publications, (a division of Wadsworth, Inc.), 10 Davis Drive, Belmont, Calif. 94002.

INTRODUCTION TO DIGITAL BOARD TESTING
By R.G. Bennetts

An informal, practical introduction to the neglected topic of fault detection and fault location, i.e., testing. As the author points out, many books have been written on the design of digital circuits and systems, while few have discussed the related issue of testing. He warns that fault diagnosis is critical to the total cost of design, production and field maintenance and that many testing requirements should be implemented at the design stage. Topics covered in his comprehensive, up-to-date text include terminology, test-pattern generation, test-performance evaluation, functional board testing, life-cycle coasting and testable design. There is a 30-page appendix devoted to the D-algorithm, the best-known algorithm for generating test patterns for specific fault conditions.

Dr. Bennetts, currently director of Cirrus Computers Ltd. in the UK, combines years of academic experience as researcher and lecturer at Southampton University with practical industrial experience as a digital design engineer. His book is aimed at four specific audiences: electronic engineers or others about to embark on a career as a test programmer, practicing logic designers, managers of test programmers and test systems and students of digital electronic engineering.

Hardcover, 304 pages, $32.50. Crane, Russak & Company, Inc., (Computer Systems Engineering Series), 3 E. 44th St., New York, N.Y. 10017.

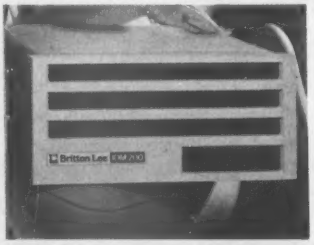
DATA MODELS
By Dionysios C. Tsichritzis and Frederick H. Lochovsky

This book speaks to two widely different types of readers: data base managers looking for fast practical solutions and academics involved in research and theory. The authors provide a framework for all the data models proposed to date, with the hope of helping people organize data conceptually and make the best use of the information represented. The focus is on the logical properties

It's Opening Night for the IDM 200, the new smash hit in complete relational database management systems. This latest Britton-Lee production scales special-purpose DBMS hardware down to minicomputer and microcomputer systems.

Toast The New Star!

This stellar performer obsoletes software-only DBMS systems by relieving the central processor of its traditional but inefficient database management role. The IDM 200 speeds up database management operations to improve system throughput by up to 10 times. And it permits database expansion to nearly 3 billion bytes.



Powerful Supporting Cast!

The IDM 200 goes far beyond standard slower software-only DBMS systems because of its powerful supporting cast. Its IDL™ query language, for example, reduces the complexity and expense of programming. Many application problems can be solved without programming using IDL (Intelligent Database Language).

™Intelligent Database Machine, IDM, Intelligent Database Language and IDL are trademarks of Britton-Lee, Inc.

The IDM 200 has the specialized-hardware power to provide complete database management function, including integrated data dictionary, concurrency control, audit logging, transaction management, security, back-up, and crash recovery at extremely high speed.

Low-Budget Production!

The IDM 200 was designed to be a user's bottom-line success story as well as a box-office hit. Small business computers can finally have sophisticated and practical DBMS hardware at popular prices. And computer systems past their prime, with the IDM 200 facelift, will play to packed houses for years.

V/rite Your Own Review!

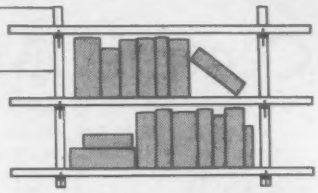
Get the facts you need from your system supplier about the IDM 200 or the higher-performance IDM 500. Or get the latest reviews by calling or writing to

Britton Lee, Inc.

90 Albright Way, Los Gatos, CA 95030, (408) 378-7000 Telex: 172585

New Jersey, (609) 921-3113/D.C., (703) 790-0440/Texas, (713) 880-8769/Illinois, (312) 364-6400/Calif., (213) 784-7444/ U.K., 01-572-0397

Off the Press



This monthly column describes a variety of recently published books of interest to Computerworld *readers. The books can be purchased or ordered at most bookstores; CW does not sell books.*

All inquiries for further information about the books should be directed to the publishers.

Publishers that wish to have their books considered for review can direct press releases, catalogs or other information to Features Editor, Computerworld, *P.O. Box 880, Framingham, Mass. 01701. CW cannot be responsible for unsolicited books.*

of data models and not their implementation. The authors' intent is to provide insights that the reader will translate into practical techniques.

In addition to definitions and numerous exercises, the book covers relational, network, hierarchical, entity-relationship, binary, semantic network and infological data models, schema design and analysis and data base management systems mapping. References for further reading span 22 pages.

Hardcover, 381 pages, $24.95. Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632.

MINDS AND MECHANISMS: Philosophical Psychology and Computational Models
By Margaret A. Boden

Boden — a leading cognitive scientist and author of *Artificial Intelligence and Natural Man* — has assembled a thought-provoking collection of her essays that will form an important philosophical contribution to cognitive studies. Collected from widely disparate publications focusing on philosophy, psychology or computer science, the essays taken together provide an interdisciplinary approach to the problem of how the mind works. Boden finds that computational models, based on information processing concepts within computer science and artificial intelligence, may be useful or even necessary in articulating the mind's complexities. The first and largest part of the book deals in "computation and explanation," which explains her computational viewpoint and argues that it is not antithetical to a humanistic or hermeneutic view.

A wide-ranging book for the serious thinker and forward-looking reader in artificial intelligence.

Hardcover, 311 pages, $29.50. Cornell University Press, 124 Roberts Place, Ithaca, N.Y. 14850.

COMPUTER PERFORMANCE EVALUATION: Tools and Techniques for Effective Analysts
By Michael F. Morris and Paul F. Roth

An easy-to-read guide for system managers and technicians interested in computer performance evaluation (CPE) techniques. Beginning with realistic goal setting, the book traces each step in a system's life cycle — procurement, installation, operation and transition — and explains how, when and where to implement CPE in each phase. Provides a wide-ranging and detailed overview of CPE tools and their applications, including accounting data reduction packages, software and hardware monitors, program optimizers, benchmarking, analytic models, simulation and performance management reporting systems. Pains were taken to keep the text readable. For example, a section on software physics departs from traditional physics notation of Greek letters and mathematics symbols, since managers might have found it unappealing. Numerous tables, figures and checklists provide instant facts, helping to make the book highly accessible.

All the material in the book has been "tested" in public and private seminars in the U.S., Canada, Europe and South America. The book leaves the reader with a structure for continuing CPE projects in a rapidly changing field.

Hardcover, 260 pages, $24.95. Van Nostrand Reinhold, 135 W. 50th St., New York, N.Y. 10020.

"It's a Wine and Cheese Still Life Totaling $8.87."

Go With McGraw-Hill's Experience!

Join The
Computer Professionals' Book Club

TAKE ANY 3 BOOKS FOR ONLY $1.00 EACH (VALUES TO $75.00)

If you join now for a trial period and agree to purchase three more books —at handsome discounts—during your first year of membership.
(Publishers' prices shown)

PRINCIPLES OF INTERACTIVE COMPUTER GRAPHICS, 2/e
By W. M. Newman & R. F. Sproull
463/387B (Counts as 2 of your 3 books) $28.95

AUTOMATIC DATA PROCESSING HANDBOOK
Edited by The Diebold Group, Inc.
168/075 B (Counts as 2 of your 3 books) $44.95

PRINCIPLES OF DATABASE SYSTEMS
By J.D. Ullman
582126-5 $21.95

INFORMATION SYSTEMS THROUGH COBOL, 2/e
By A. S. Philippakis & L. J. Kazmier
497/915 $22.95

16-BIT MICROPROCESSOR ARCHITECTURE
By T. Dollhoff
582003-X $24.95

MICROPROCESSOR APPLICATIONS MANUAL
By Motorola, Inc.
435/278 B (Counts as 2 of your 3 books) $42.50

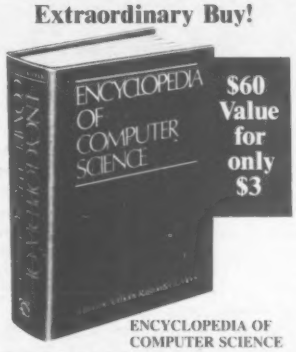
DESIGN AND STRATEGY FOR DISTRIBUTED DATA PROCESSING
By J. Martin
582437-XB (Counts as 2 of your 3 books) $37.50

BASIC: GETTING STARTED
By W. S. Davis
582355-1 $5.95

ESTABLISHING CONTROLS AND AUDITING THE COMPUTERIZED ACCOUNTING SYSTEM
By E. G. Jancura & R. Boos
582141-9 $19.95

BUSINESS INFORMATION PROCESSING WITH BASIC
By G. Struble
582360-8 $13.95

Extraordinary Buy!



ENCYCLOPEDIA OF COMPUTER SCIENCE
By A. Ralston & C. L. Meek
769/01XA (Counts as 3 of your 3 books) $60.00

PROGRAMMING LANGUAGES
By A. B. Tucker, Jr.
654/158 $23.95

DOCUMENTATION STANDARDS AND PROCEDURES FOR ON-LINE SYSTEMS
By M. L. Rubin
789/479 $23.50

COMPUTER CONTRACT NEGOTIATIONS
By J. Auer & C. E. Harris
582345-4B (Counts as 2 of your 3 books) $34.50

APPLE PASCAL
By A. Luehrmann & H. Peckham
491/712 $14.95

DATA BASE COMPUTERS
By O. H. Bray & H. A. Freeman
582042-0 $19.95

QUALITY ASSURANCE FOR COMPUTER SOFTWARE
By R. Dunn & R. Ullman
183/120 $24.50

COMPUTER NETWORKS
By A. S. Tanenbaum
582362-4B (Counts as 2 of your 3 books) $28.00

EDP COSTS AND CHARGES
By J. W. Cortada
582077-3 $24.95

COBOL BOOK OF PRACTICE AND REFERENCE
By R. L. Grauer
582316-0 $19.95

DATABASE SECURITY AND INTEGRITY
By E. B. Fernandez & R. C. Summers & C. Wood
582358-6 $17.95

COMPUTER CAPACITY
By M. Strauss
582317-9 $24.95

THE PASCAL HANDBOOK
By J. Tiberghien
582365-9B (Counts as 2 of your 3 books) $35.00

INVITATION TO FORTH
By H. Katzan
582284-9 $17.50

Why YOU should join now!

- BEST AND NEWEST BOOKS IN YOUR FIELD—Books are selected from a wide range of publishers by expert editors and consultants to give you continuing access to the best and latest books in your field.
- BIG SAVINGS—Build your library and save money too! Savings ranging up to 30% or more off publishers' list prices—usually 20% to 25%.
- BONUS BOOKS—You will immediately begin to participate in our Bonus Book Plan that allows you savings of between 70%–80% off the publishers' prices of many professional and general interest books!
- CONVENIENCE—12–14 times a year (about once every 3–4 weeks) you receive the Club Bulletin FREE. It fully describes the Main Selection and alternate selections. A dated Reply Card is included. If you want the Main Selection, you simply do nothing—it will be shipped automatically. If you want an alternate selection—or no book at all—you simply indicate it on the Reply Card and return it by the date specified. You will have at least 10 days to decide. If, because of late delivery of the Bulletin you receive a Main Selection you do not want, you may return it for credit at the Club's expense.

As a Club member you agree only to the purchase of three books during your first year of membership. Membership may be discontinued by either you or the Club at any time after you have purchased the three additional books.

Membership Order Coupon

Computer Professionals' Book Club
P.O. Box 582
Hightstown, NJ 08520

Please enroll me as a member and send me either the ENCYCLOPEDIA OF COMPUTER SCIENCE, billing me only $3.00, or any three other books, billing me only $1.00 each, plus local tax, shipping and handling. I agree to purchase a minimum of three additional books during my first year of membership as outlined under the Club plan described in this ad. A shipping and handling charge is added to all shipments.

☐ Check here if you want ENCYCLOPEDIA OF COMPUTER SCIENCE (769/01XA).
☐ Check here if you prefer three other volumes, and indicate below by number the books you want. A few expensive books (noted in the descriptions) count as more than one choice.

Name _____
Address/Apt. # _____
City/State/Zip _____
Corporate Affiliation _____

This order subject to acceptance by McGraw-Hill. All prices subject to change without notice. Offer good only to new members. Others from outside the U.S. cannot be accepted.

P39571

Central GM Net Eases Distribution Methods

FLINT, Mich. — The recent centralization of General Motors Corp.'s computerized replacement parts network has streamlined distribution methods and simplified order tracking.

With all but one warehouse tied into the system, the network replaces a structure in which each geographical area was under the jurisdiction of an Area Processing Center (APC). APCs were located in Oakland, Calif.; St Louis; Atlanta; and Newark, N.J., a company spokesman said.

Inventory and distribution activities were computer-coordinated with all APCs and GM's 34 Parts Distribution Centers (PDC) equipped with Raytheon Co. computer systems for intercommunication.

Eight major parts plants in Michigan stock replacement parts for the various GM lines. Strategically located near major markets, the PDCs receive and warehouse parts shipments from the major parts plants and fill replacement parts orders for the 14,000 GM customers around the country.

Formerly, APCs would initiate and expedite dealer orders via computer link, communicating electronically with all PDCs in the region and with the division's central office data center, the spokesman explained.

The APC was also responsible for tracking PDC inventories, incrementing and decrementing totals when parts were received or shipped out from the PDC and requesting parts plant shipments when stocks ran low.

A disadvantage of the system, however, was that it was the only link between the PDCs and the central computer. If the computer went down, all the PDCs in a region were cut off from division headquarters here and from the rest of the distribution network, he said.

APCs Phased Out

Under the recently implemented system, all of the APCs have been phased out and the existing computers at all 34 PDCs communicate directly with a single host processor. This Field Processing Center (FPC) has the capacity, speed and flexibility to perform all of the functions previously relegated to the four APC computers.

The decentralized APC organization created problems with order tracking and record keeping, particularly when parts orders were referred from one PDC to another. In the new system, updates from all PDCs go into a central tracking program in the Pontiac, Mich., computer bank.

A new feature of the FPC system will be the so-called "Rapid" option, available to all GM dealers in the country. In addition to interfacing directly with PDC computers, under the Rapid program the FPC computer can also be accessed from remote terminals located in individual dealerships.

While the new FPC has done much to streamline the entire distribution process, the PDC remains the workhorse of the system. The PDC located near Chicago, one of GM's largest, provides a good example of PDC computer hardware and its function.

This PDC has a warehouse capacity of 385,000 square feet, plus additional storage space in a second warehouse. It serves 1,104 "zone" dealers in a five-state area and, because it is one of the largest PDCs, also sees a large number of referral orders from outside the zone, according to the spokesman.

The computer room houses two mirror-image Raytheon PTS 1200 CPUs, each with 128K bytes of directly addressable memory. System I is used to communicate via data communications line with the central APC and the FPC.

System II is an in-house computer used to keep permanent files transferred from System I, payroll information, parts shortage files, master location files and other local data.

Chicago PDC Computer Room

Any information that must be transferred between the in-house System II and the central APC computer must be transmitted through System I. While System I does not perform as many functions as System II, the volume of data it handles is much greater.

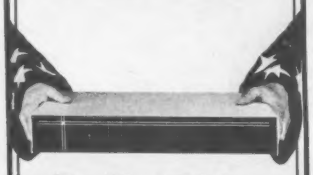
Both Raytheon systems are equipped with two disk drives, each with a capacity of 44M bytes. The System I computer employs three remote terminals; the in-house system has 13 terminals. Four line printers — one at 300 line/min, two at 600 line/min and one at 900 line/min — and three serial printers provide hard copy records of all transactions. In addition, they have an extensive on-line data entry setup for order transmission.

Incoming parts orders received over System I are placed into a disk queue to await processing. Turnaround time for each order in queue is approximately five minutes, according to Joe Shireman, former supervisor of DP at the Chicago PDC.

Total time from receipt of an average order to shipment-ready status is normally about three hours. Nevertheless, volume is such that the computer facility performs order-writing roughly 18 hours a day, according to Shireman.

ANNOUNCING

MERLIN



The Magic Modem

MERLIN'S real magic is the combination of an FCC registered 212A compatible dual port modem with automatic dialing of stored numbers (no telephone required), 16K memory and full text editing capabilities.

★AUTOMATICALLY★
Dials Your Host Computer
★BUFFERS DATA★
★EDITS DATA★

For example: Users of computer services can prepare and edit up to 16,000 characters of data prior to on-line transmission. When ready, automatic dial connection is made to the computer and the data is transmitted at the speed of the modem (300/1200 BAUD) versus the typing speed of the operator. In addition, receive data can be collected in the buffer memory for further revisions or off-line transfer to slower terminal units.

With these features, MERLIN will pay for itself in no time . . . Just like magic . . . and all for a price of $1,450.00.

Put some processor power between your terminal and your computer.

Call BACKUS DATA SYSTEMS, 1440 Koll Circle, San Jose, CA 95112, (408) 279-8711.

BACKUS
data systems, inc.

QWIKTERM

Boston (617) 246-1665 Chicago (312) 595-7733 Los Angeles (714) 521-7160 New York (212) 564-7731 Wash., D.C. (703) 522-1210 San Francisco (415) 461-0923

TI 765 — Bubble memory $1700.
LA 36 — DECwriter II $595. plus options
Perkin Elmer Owl 1200 — CRT $995.
Techtran 8400 — Cassette Recorder $250.
AJ 242A — Acoustic Coupler $150.
ADDS Consul 980 — CRT $495.
Execuport 300 — Portable $495.

Fully reconditioned. Limited quantities available. Short or long term leases on both new and reconditioned terminals, or outright purchases. Call us for information.

Computer Vandals Replacing Crooks

Pranksters Gain Access, Destroy Programs

LOS ANGELES — First there were computer crooks. Now there are computer vandals who are not necessarily involved in computer-related theft, but find it interesting to access unauthorized data, even if they sometimes destroy computer programs in the process.

According to the *Los Angeles Times*, computer pranksters have rummaged through corporate trash and posed as company employees in efforts to find account numbers and classified instruction manuals that can be used to vandalize major computer systems. Organizations including the Pacific Telephone and Telegraph System, the California Department of Motor Vehicles and the Southern California Credit Bureau have reportedly been recently victimized by the vandals.

The Federal Bureau of Investigation estimated that as many as 150 individuals in California may have the talent to break into a computer system and either alter or destroy data. Other officials, however, contend that virtually anyone can utilize computers improperly.

One incident tied to computer vandalism involved three men, ranging in age from 18 to 25, who were recently charged with stealing several vital computer manuals from Pacific Telephone and Telegraph while pretending to participate in a phone company tour.

The youngest of the three was also reportedly involved in causing an estimated $250,000 worth of damage to a San Francisco firm's processor and gaining access to Digital Equipment Corp.'s internal software development system — The Ark — in Maynard, Mass.

Other incidents may involve computer pranksters, according to the FBI. These include twice shutting down the telephone company's directory assistance facility in Pasadena, Calif., in late 1981; obtaining records from the state Department of Motor Vehicles; and accessing confidential credit information.

In addition, computer clubs, organized to trade computer games and equipment, are being used to arrange sexual encounters, barter electronic espionage and sabotoge techniques and supposedly set up contract killings, the *Times* reported.

'Crash Clubs'

Sometimes called "crash clubs," groups of computer pranksters were reportedly in competition to see who would be the first to figure a way to electronically break into Pacific Telephone's Computer System for Mainframe Operations system. One former vandal, now employed by the phone company, told the *Times* he used a friend employed at the phone company to steal computer manuals, photocopy them and then replace the manuals before company officials knew they were missing.

According to the *Times* report, one youth heard that a San Francisco firm was having software problems. He called the firm claiming to be a software consultant, and a secretary gave him all the information required to log on to the system. The firm later reported that the system's software was hit with an estimated $250,000 in damage.

The Department of Justice in Sacramento, Calif., is currently offering periodic seminars dealing with computer crime.

Data Base Book Lists Suppliers

WASHINGTON, D.C. — The 1982-1983 edition of the Information Industry Association's reference work, "Information Sources," will be released in March.

The directory reportedly enables users to find data bases and suppliers. Among the categories it includes are abstracting services, business information, clearinghouses, computer software, consulting services, data base producers and vendors, document acquisition, education/training, forecasting, government information, literature searching, market research, networking, records management, teletext and videotext.

Also included in the eighth edition are detailed alphabetical listings describing each member company's activities, services and branches; a "names and numbers" section identifing key executives with their affiliations and phone listings; a listing of foreign affiliates by country; and an index.

The paperbound volume is priced at $29.95 through April 30, and at $37.50 afterward, from the Information Industry Association, 316 Pennsylvania Ave., S.E., Suite 400, Washington, D.C. 20003.

SOFTWARE

QUEO-IV
PRIME USERS

Proven technology, price performance, plus the dynamics to incorporate continued growth in the leading edge of software advancements are only a few reasons to use QUEO. Our users are achieving bottom line results as they cultivate their investment in software.

QUEO is the only compiled, true multi-user language written exclusively for, and on Prime Systems. QUEO is 100% compatible with PRIMOS and MIDAS. Computer Techniques has been writing software for Prime installations since revision 6 of the operating system. Many Prime users feel QUEO has developed into the premier application development tool, ad hoc query report writer, and data base management system running on Prime Systems today! QUEO fits well into the medium to large Prime, true multi-user installations and application development environments.

COMPUTER TECHNIQUES (717) 489-7502
1622 Main Avenue Olyphant, PA 18447

New Low Cost VT-100* Alternative

Before you buy one more ANSI compatible video terminal, compare it to the "Small Wonder 10". You'll discover that only GTC can offer DEC VT-52/100 emulation at the best price/performance ratio available anywhere! Besides containing most of the VT-100 features, the SW10 provides as standard:

- Pass-through Printer Port
- Non-glare Green or White Monitor
- 12 User Programmable Function Keys
- English Language Prompted Set-up Mode
- 80 Columnar Tabs Stored in RAM
- Programmers Mode
- Simulated Block Mode
- Limited Editing
- Small Footprint - 2/3 Size of VT-100
- Light Weight - A Mere 26 Pounds

For further information on the SW10, call or write today. (800) 854-6781 or (800) 432-7006 in California.

GTC General Terminal Corporation
14831 Franklin Avenue
Tustin, California 92680
(714) 730-0123

$995 List Price

(GTC is currently seeking Independent Sales Organizations. Inquiries welcomed.)

*Registered trade mark of Digital Equipment Corporation

For Proper Utilization

Hardware Firm Gauges Uses of Own Software

How does a computer hardware manufacturer select software packages for its own use?

Harris Corp., a $1.6-billion manufacturer of communications and information processing equipment in Melbourne, Fla., employs more than 26,000 people worldwide in 26 operating divisions. The firm's philosophy toward applications software centers upon the concept of leveraging corporatewide commitments to ultimately serve the end user, Herb McCauley, corporate vice-president for management information systems (MIS), said.

"When operating divisions' MIS plans identify opportunities for a generic software package, we begin to conduct an internal review to gauge the applicability of offering the package to other divisions. Once four or more divisions have shown interest and the necessary requirements, we commence an evaluation process using a team comprised of actual division users, MIS personnel and corporate staff — being careful to utilize their talents in each area of respective expertise," he explained.

Harris' evaluation process involves the following:

- Does software meet the criterion established by the selection team?
- Is the quality of the code up to par?
- Are contractual arrangements satisfactory?
- And, what is the long-term product strategy of the actual vendor? "Of course, the issues that we've encountered [that are] critical to our long-term success with a package concern operating system considerations, DBMS and data communications. These issues are vital in our MIS strategy," McCauley said.

He said Harris has had much success with its program to date. "We have established a corporate library of application packages in areas like payroll, general ledger, accounts receivable, fixed assets, accounts payable, order administration, sales/use tax, manufacturing and more."

Additional Benefits

He feels this has led to savings for the company's end users, in addition to the following benefits:

- Standard Product effect, which assists MIS and user personnel in learning from each other and exchanging experiences, particularly when user or MIS personnel move to another division.
- Conservation of development effort allowing work in areas like integrated DP/WP applications where we have not found purchased software — also on-line interfaces to batch packages.
- Dollar savings through a coordinated and unified purchase/use program.
- Maintainability — divisions seldom use all the functions of a package during the initial implementation. "The proper utilization of purchased applications software is a basic strategy that has well served our company-wide user and MIS community with sensitive applications solutions," McCauley added.

The most accurate, most efficient data entry tool in the world is right at your fingertips.

It's an ordinary lead pencil. Something you use every day. Yet when it is used with the Westinghouse W201 Optical Mark Reader (OMR), an ordinary pencil can work 100 times faster than a keypunch operator.

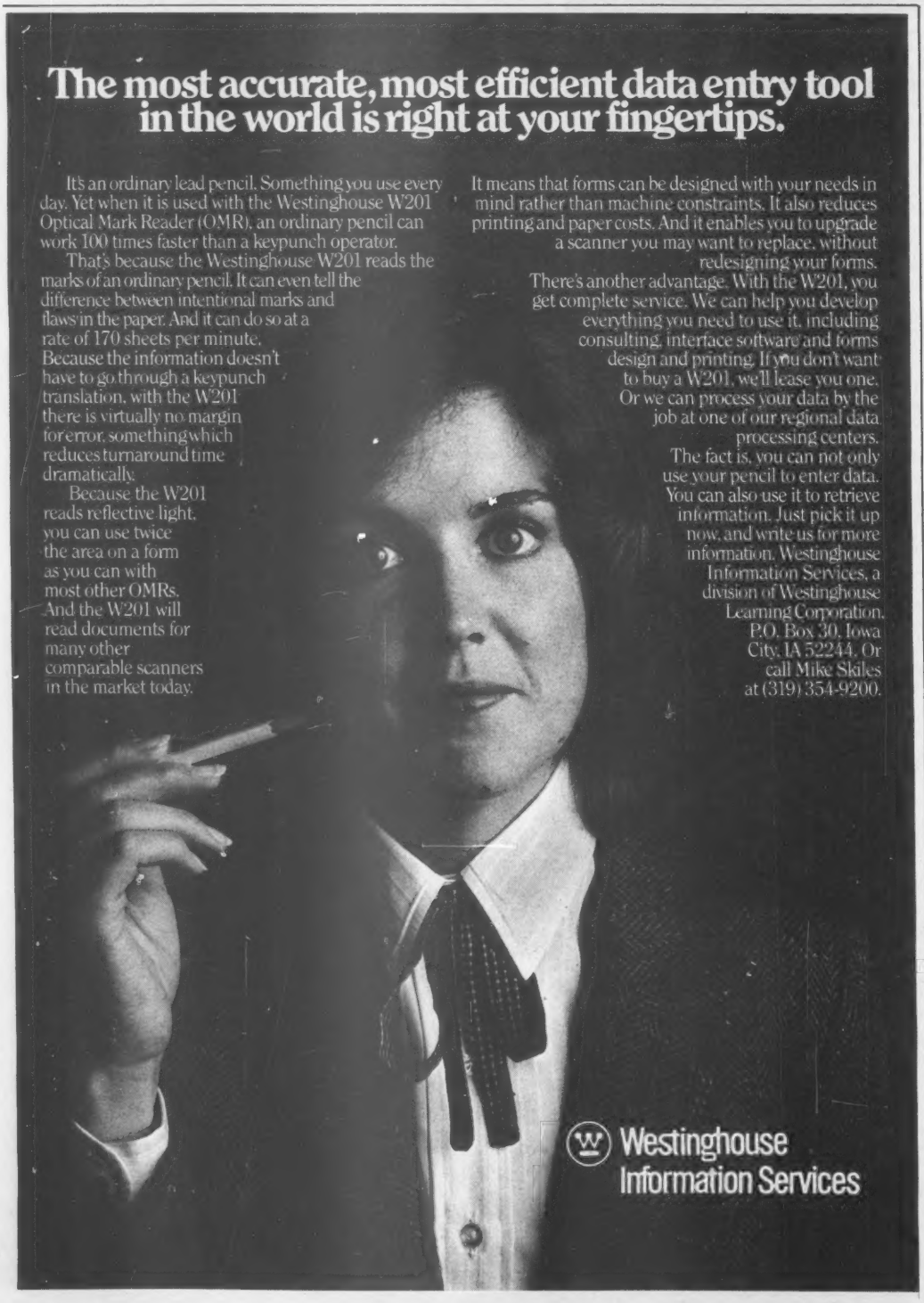
That's because the Westinghouse W201 reads the marks of an ordinary pencil. It can even tell the difference between intentional marks and flaws in the paper. And it can do so at a rate of 170 sheets per minute. Because the information doesn't have to go through a keypunch translation, with the W201 there is virtually no margin for error, something which reduces turnaround time dramatically.

Because the W201 reads reflective light, you can use twice the area on a form as you can with most other OMRs. And the W201 will read documents for many other comparable scanners in the market today.

It means that forms can be designed with your needs in mind rather than machine constraints. It also reduces printing and paper costs. And it enables you to upgrade a scanner you may want to replace, without redesigning your forms.

There's another advantage. With the W201, you get complete service. We can help you develop everything you need to use it, including consulting, interface software and forms design and printing. If you don't want to buy a W201, we'll lease you one. Or we can process your data by the job at one of our regional data processing centers.

The fact is, you can not only use your pencil to enter data. You can also use it to retrieve information. Just pick it up now, and write us for more information. Westinghouse Information Services, a division of Westinghouse Learning Corporation, P.O. Box 30, Iowa City, IA 52244. Or call Mike Skiles at (319) 354-9200.



Westinghouse Information Services

Tel Aviv to Host Assembly in '83

TEL AVIV, Israel — The electronic library is the subject of an international conference to be held here March 14-18, 1983.

The conference will specialize in minicomputer and microcomputer applications used by libraries and by information and documentation centers.

Topics to be covered include software requirements, networks, system design and management and problems in developing countries.

Further information on the conference is available from the National Center of Scien-.ific and Technological Information, 84 Hachashmonaim St., Tel Aviv 61 200 Israel.

Some data base management systems are like cheap wines.

Unpleasant today and a headache tomorrow.

To avoid such disappointment, consider ADABAS from Software AG. It's the DBMS you can count on to live up to your expectations—now, and in the years to come.*

ADABAS can be enjoyed immediately. There's no installation delay because there's no need to predefine all the rules for data usage or to preestablish all possible data relationships. ADABAS' inverted list architecture lets you access data directly and immediately. You can install the system and begin to load your data in just one day.

The more you use ADABAS, the better it gets. The way ADABAS stores data takes the headache out of dealing with change. By completely separating the data and index structures, ADABAS lets you change the way to view data without changing the way the data is stored.

ADABAS can be used for any occasion. It contains DBMS access tools for virtually all corporate information needs. Included are: ADASCRIPT+, an online inquiry language; ADACOM, a batch report writer; ADAMINT, a host language interface; and an integrated, online data dictionary. For instant application development, you can add NATURAL, our program development language, and cut development time up to 90%.

ADABAS for your IBM processor, ADABAS-M for VAX/PDP. Use the coupon to arrange for a tasting, or to attend one of our free seminars.

software AG
OF NORTH AMERICA, INC

Software AG, of North America, Inc.
11800 Sunrise Valley Drive, Reston, Virginia 22091
(703) 860-5050

☐ I would like to arrange for an ADABAS tasting.

☐ Please send me information on your free seminars.

Name _____

Title _____

Company _____

Address _____

City _____ State _____

Zip Code _____ Telephone ( ) _____

CPU _____ Operating System _____

CW 0208

Assists in Inventory Control

Distribution Package Solves 'Happy Problem'

ODENTON, Md. — A company here that was facing the "happy problem" of orders increasing faster than they could be filled decided the solution was to install a distribution package.

Nevamar Corp., a manufacturer of decorative laminate, has six stocking warehouses located across the country. According to Charles St. John Smith Jr., manager of information systems, operating hours increased, but effective production per man-hour decreased. Inventory increased, but the percent of complete orders shipped did not. Customers were also being sent the wrong material at the wrong price.

It was decided that the company's IBM 360 and its software systems would not be able to support the increasingly volatile marketplace. It was felt that an on-line and preferably real-time computer that could support order processing and inventory control would be required to support the projected growth of Nevamar.

A group was formed to examine the marketplace and ascertain if a system was available to meet these needs. What became increasingly clear as the responses were received was that although a number of vendors were proposing hardware that would support a real-time environment, the programming would have to be done in-house, Smith said. With a staff of only two programmer/analysts, developing this software from the ground up was an undertaking that appeared to be beyond the existing capabilities.

DIS Proposal

The one response that included a vendor-developed and -supported software package was received from Burroughs Corp. The Distribution Information Systems (DIS) was proposed and the supporting B-1855 hardware, with a local terminal network, would be the vehicle for implementation.

DIS included an order processing, inventory control and accounts receivable module, which were interrelated through a common data base developed using Burroughs' data management system DMS-11. A non-procedural reporting language, Reporter, was included in the proposal, as was an inquiry package, Data Management Inquiry.

The first task to be accomplished was training on DIS. This training was taken not only by management information systems personnel, but also by the manager of customer service.

Smith said that the installation of DIS was planned to be done in phases, and bridge programs were written to pass data between the batch programs running on the 360 and DIS. The B-1855 was installed in April 1980.

Smith noted that installation of the accounts receivable system provided a number of benefits that were not anticipated. DIS controls payments in a batch mode, with totals of document count and dollar amount controlling batch completion. A hard-copy report of the day's activities is printed and allows a complete audit trail to be generated.

"Cash is now posted on a daily basis, and both payment and invoice detail is available to the accounts receivable and credit departments through video terminals. The credit manager is now able to speak to customers with an up-to-date account status at his fingertips, and the old cry of 'the check is in the mail' is heard less often," he said.

Mayor Reason for DIS

The major reason for installing DIS, the order processing system, was the next area to be installed. Smith said the real-time system enables orders to be entered, edited and accessed immediately after entry.

On a daily basis, a report showing the orders entered for the previous period is produced for management review. In addition, an orders-on-hold summary report is printed for the credit department.

"This system has significantly reduced the number of pricing errors and the number of orders scheduled for the wrong shipping day," he said. "The time required to process an order has been reduced by a minimum of one day. In fact, order acknowledgements are printed within 30 minutes of order service finishing for the day." The final module being installed is the inventory control module.

"When reviewing what has been accomplished, it appears that the decision to go with a software package and make the site-unique modifications has been a good one," he said. The idea of buying software that solves a problem and then buying the hardware needed to support it is not unique, but is followed in so few cases that it must be emphasized. Nevamar would be successful no matter which hardware had been chosen, but the success would not have come so rapidly and at the same cost if the system had been developed from scratch.

New VISUAL 300. Now let's compare flexibility and price.

Before you buy one more video terminal compare the new VISUAL 300.

The microprocessor-based VISUAL 300 combines a highly comprehensive command set with traditional VISUAL ergonomic design. The result is a terminal built for flexibility and superior productivity. And at surprisingly low prices.

Of the terminals in its class only VISUAL 300 offers so many standard features including:

- Flexible block mode transmission parameters
- Programmable non-volatile function keys
- Split screen
- Full editing
- 12" or 14" non-glare screen
- Non-volatile set-up modes for selection of terminal parameters, eliminating cumbersome switches.

Call for full details on the VISUAL 300... the new standard of comparison for video terminals.

Service available in principal cities through Sorbus Service Division of Management Assistance Inc.

AN APPLES-TO-APPLES COMPARISON OF FEATURES.

	VISUAL 300	TeleVideo® 950
ANSI X3.64 Specified	STD	NO
Block and Character Transmit	STD	STD
Solid State Keyboard	STD	NO
Programmable Non-Volatile Function Keys	STD	NO
Video Attributes Require No Display Space	STD	NO
Non Glare Screen	STD	STD
Smooth Scroll, Slow Scroll and Jump Scroll	STD	NO
Audible Key Click	STD	STD
Non Volatile Set-up Modes, "Menu" Style	STD	NO
25 Status Line	STD	STD
Split Screen	STD	STD
Line Drawing Character Set	STD	STD
Block Graphics	STD	NO
Sculptured Keycaps, Matted for Low Glare	STD	NO
Paging	OPT-8 Pgs.	OPT-4 Pgs.
Full Editing	STD	STD
Programmable Non Volatile Columnar Tabbing	STD	NO
Choice of Typomatic/Non Typomatic Keyboard	STD	NO
14" Screen	OPT	NO
Independent Xmit/Receive Rates	OPT	NO
N-Key Rollover	STD	NO
CR New Line Mode	STD	NO
Foreign Character Sets	OPT	NO
User Programmable Non-Volatile Answerback, 32 Codes	STD	NO
Screen Brightness Control from Keyboard	STD	NO
XON/XOFF Flow Control, Split for Xmitter and Receiver	STD	NO

VISUAL See for yourself

Visual Technology Incorporated
540 Main Street, Tewksbury, MA 01876
Telephone (617) 851-5000. Telex 951-539

Kodak introduces the microfilmer that speaks computer.

Now there's a microfilmer that can use the same index your computer uses to index documents and store them for later retrieval. It's the new Kodak Reliant 800 microfilmer, and you can rely on it like never before to file documents on film by the hundreds per minute.

The Reliant 800 microfilmer makes its mark like no other microfilmer. It gives you three levels of image-marking capability, so now you can film documents before or after data capture, and you can retrieve that data quicker and more accurately than ever before.

Very simply, the Reliant 800 microfilmer is the state of the art in reliability, flexibility, speed, ease of operation and, ultimately, productivity.

Whether you're in a retail, financial or industrial situation, the Reliant 800 microfilmer can save you time and money in the processing and storage of the avalanche of paper documents that make up today's business environment.

To find out more of what the new Reliant 800 microfilmer can do for you, just fill out the coupon.

Kodak

GIVE YOUR COMPUTER A PHOTOGRAPHIC MEMORY.

Electronic Filing from Kodak.

Eastman Kodak Company, Business Systems Markets Division, Dept. DP2528, Rochester, N.Y. 14650.

☐ Please send me more information on the new Kodak Reliant 800 microfilmer.

☐ Please have a Kodak representative contact me.

Name

Title

Company

Address

City State Zip

© Eastman Kodak Company, 1982

Wang compatible peripherals at friendly prices!

Tie into top of the line peripherals like Tally, TI, Diablo, Okidata, and TeleVideo.

Here's exciting, dollar saving news for Wang users who want a choice when it comes to printers and video terminals.

ACS has software transparent interfaces that plug top name peripherals into the Wang 2200 series or VS models and VS remote work stations equipped with a parallel port. Now you can have enhanced capabilities like letter quality printing, two color printing, faster throughput, and *higher reliability.* Write or call today for more information.

acs automated control systems, inc.

1801 130th NE, Suite 4, Bellevue, WA 98005
(206) 881-0177

Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

HP 3000
HARDWARE AND SOFTWARE

- **HP HARDWARE AND SYSTEM SOFTWARE** sold by DSI and installed and fully supported by Hewlett-Packard.
- **SUCCESS-PROVEN APPLICATION PACKAGES** sold by DSI and installed and supported by their developers, Data Systems for Industry and Hewlett-Packard at over 40 DSI sites.
- **FIXED PRICE AND SCHEDULE** with hardware-software discounts and leasing available to qualified customers.
- **INTERNATIONAL SUPPORT FROM OFFICES IN—**

Los Angeles Chicago Europe

ACCOUNTING
- Payroll, Personnel
- Labor Distribution
- Accounts Receivable
- Accounts Payable
- Fixed Assets
- General Ledger

INTEGRATED MANUFACTURING
- Order Entry
- Material Requirements Planning (MM/3000)
- Inventory Control
- Shop Floor & Capacity Control
- Job Cost Reporting

DISTRIBUTION
- Order Entry
- Multi-Warehousing
- Shipping—Billing
- Accounts Receivable
- Replenishment Planning
- Distributed Processing

DISCOUNTS AND LEASING
- Up to 24% volume discounts on HP hardware-software systems sales
- Leasing available for hardware-software system sales

DATA SYSTEMS for INDUSTRY
3450 E. Spring Street, Long Beach, CA 90806
(213) 595-8741

Insurance Firm Reaches For 'Star,' Solves Problems

NEWARK, N.J. — In line with an emerging trend among large insurance firms, The Mutual Benefit Life Insurance Co. said it achieved greater agent efficiency and found new word processing capabilities when it tied together 100 nationwide offices with a computer and communications network.

Mutual Benefit Life took an innovative approach that went far beyond replacing its existing central systems with new mainframes. The company designed a plan for a computer-based communications network called Systems to Achieve Results (Star). The plan first called for setting up small business computers in all general agencies to provide local data and word processing capabilities and, second, for tying all of those computers through a telecommunications link into the company's central data base.

Primary Justification

"The primary justification for the network was that it would allow us to move functions which are currently processed in the home office out to the general agencies," said Marshall D. Clary, who was vice-president of information services at Mutual Benefit Life when the network was installed. He was succeeded in that position by Charles McCaig. "It [the network] would enable us to cut out a lot of middleman-type processing and duplication of work and thereby reduce home office personnel.

General agencies would benefit as well. The network would allow them to do more of their back-office processing locally, without an increase in staff, and in a fraction of the time it used to take to forward information to the home office.

Star's basic building blocks are Wang Laboratories, Inc. 2200MVP computers. Three configurations match the differing sizes and volumes of the general agencies, which may have anywhere from 30 to 140 agents. All systems support the full range of software programs and have a diskette drive as well as the IBM 3270 telecommunications option and teletypewriter dial-out capabilities. Memory in the central processors ranges from 32K bytes to 256K bytes and from 10M bytes to 27M bytes on the system disks. The systems include up to three workstations and larger agency offices use a faster band or matrix printer in addition to the standard daisy printer.

Why did Mutual Benefit Life choose Wang equipment? "There were three principal reasons," Clary said. "First of all, we thought Wang had a range of configurations which appeared to be field-upgradable and compatible, so that we could meet the needs of our smaller agency and allow it to grow over time and have a compatible set of hardware from our giant agencies down to our smaller ones. And the equipment appeared to be rugged."

With all computers now installed, Mutual Benefit Life is setting up telecommunications links to the home office. These will give general agents instant access to data on the status of any in-force policy and on pending business being processed by the Underwriting and Issue Department, as well as license information on agents and brokers.

A promising combination of telecommunications and word processing is currently being implemented, Clary noted. "What I see us being able to do with the advent of word processing is to note electronically these kinds of conditions in our daily cycle processing and [then be able to] send this information to the minicomputer overnight. In the morning, the operator can call up standard letters stored in the glossary that are appropriate for different conditions. All the agent will have to do is to sign them and mail them out." Where phone contacts are necessary, the computer would produce a telephone list. "I see this as an additional area of sales and service support which we have not been able to provide in the past, but which word processing will make possible," he added.

The second reason was that Wang showed a willingness to commit itself to installing the 3270 telecommunications option so that Wang workstations could serve as on-line DP terminals with direct access, via telephone line, to the company's mainframe computers, which include an IBM 3033, 370/158-3 and an Amdahl Corp. 470 V/6. What was especially unique was the design of the telecommunications, which allowed concurrent operations of DP, word processing and 3270 operations on the system and a very transparent transaction between these functions at any terminal.

Savings Quick to Show

Under the first phase of the plan, computers were installed in a stand-alone mode. Software included word processing capabilities and a set of programs developed by Sigma Software, Inc. for sales illustrations and advanced underwriting support. To get an illustration, an agent simply contacts the sales specialist in his general agency. The specialist enters data on the client's financial situation and insurance needs into the computer and the computer prints out an in-depth analysis of an insurance policy that will match the client's needs.

Feedback from the agents had been positive. They used to get sales illustrations from a time-sharing service, Clary explained. "Now they don't feel that the meter is running just because they're on the system and, therefore, they can do a better job of considering alternatives.

"Word processing," he added, "is probably the sleeper of all the things that we are offering. We think it has tremendous uses and implications for our general agents." One of the most important applications will be to store client files that can be used for service contacts.

A set of accounting programs is also in production in initial agencies. This package will be of real importance because it will eliminate much of the labor and time involved in manual bookkeeping and reporting methods.

'Payroll' Fits Plastics Firm's Mold for Flexibility

ATLANTA — When a newly formed organization here decided it needed a different financial system than that used by its parent company, one of its first steps was the choice of application software packages.

Amoco Container is a subsidiary of Amoco Chemicals, which is a subsidiary of Standard Oil of Indiana. Formed as an independent subsidiary Jan. 1, 1979, the firm is a manufacturer of blow-molded polyester containers. It operates seven manufacturing plants across the country, a central office with support personnel and a research and engineering central support center.

Prior to becoming an independent subsidiary, Amoco Container shared the financial system of Standard Oil in Chicago. Because of its unique reporting requirements, the company decided to change this situation, DP Manager Richard Mehlan explained. "We are a plastics products manufacturing operation, whereas the majority of Standard Oil's operations are refineries. Our reporting needs include the ability to collect data to perform cost analysis of production efficiencies, and the systems in Chicago could not give us the labor analysis information we needed to report the cost of our operations."

During the summer of 1978, Amoco Container performed a feasibility study on moving its offices out of Chicago and establishing itself as a subsidiary. At the same time, it began an initial investigation for a payroll system. A task force of representatives from accounting and data processing was formed to evaluate various software vendors and systems on the basis of economics and features.

The company decided to purchase Management Science America (MSA), Inc.'s Payroll Accounting System in September 1979 because it provided the required features, Mehlan said. "We planned to change from a 12- to a 13-period accounting year. The 'Alltax' feature was desirable because, although we have a large sales volume, we do not have a large number of personnel and we wanted a system we could operate with a minimum staff and still keep up with the tax changes. The system also had the flexibility we needed to fulfill the reporting requirements of our seven operating locations."

Amoco Container originally considered developing an in-house general ledger system, but determined it could not accomplish its goals within the desired timeframe with this approach. "In addition, we found that the cost of purchasing a package was less than our estimated cost of developing one ourselves," Mehlan said. "We evaluated alternative general ledger systems and eventually selected MSA's." This package was purchased in October 1979 and the company was one of the first users of Release 21.

The goal at Amoco Container was to be operational at the beginning of the next year, Mehlan said. "It was the minimum amount of time, but we felt that, for tax purposes, Jan. 1 was the time to do it. We did not look forward to changing systems or switching accounting periods from months to periods somewhere in mid-year."

There were two full-time project teams composed of accounting and DP personnel to implement the systems. "It took a concerted effort both on the part of MSA and ourselves to stick to our schedules and implement the systems," Mehlan explained, "but we cut our first payroll checks on Jan. 1."

System Implementation

The General Ledger System ran well from the beginning, according to Mehlan, but there was an education factor involved. "We were dealing with eight locations, each of which was starting with a new system, and two of the locations had new accounting managers." The input was redesigned to be similar to what the Amoco Container users had been working with in the past. An accounting procedures manual also was issued as a reference to explain the various fields and codes.

The system is structured so that plant personnel can determine where they are in their closing, based on the independent ledger and balance sheet that is transmitted to them at the end of each day, he said.

During the implementation of the MSA Payroll System, Amoco Containers' payroll and accounting staff attended a two-day training session provided by the software vendor. Because each of the firm's locations have unique deductions, this was a major feature required of the payroll package. "We allow each location the flexibility of establishing whatever unique deductions and other earnings they may require," Mehlan said.

Mumps Committee Meets March 18-19

SAN FANCISCO — The Mumps Development Comittee will meet March 18-19 in Room 1703, 211 Main Street, here.

The committee is a voluntary standards organization that oversees the process of extending the specifications of the Ansi Mumps language.

For more information, contact George F. Timson, 1703 Gough St., San Francisco, Calif. 94109.

If your users and programmers know what their jobs cost—at the time they run them—won't they be more cost conscious?

Online Costing, the newest feature of the KOMAND Job Accounting System, automatically applies a cost to job steps and jobs as they are run... both online for TSO sessions and at the end of batch jobs.

COMMUNICATION

KOMAND Online Costing provides better user awareness of DP expenditures... and that means more cost control.

TIMELINESS

KOMAND Online Costing provides cost information to the right person at the right time... in time to do something about costs.

If you are a Director of Data Processing, your effectiveness can be improved by Online Costing in many ways. For example:

Operations Managers:

- KOMAND Online Costing enables operations managers to evaluate the cost effectiveness of operating procedures.
- Online Costing provides control of resources as they are consumed. Cost-conscious users are wiser users of DP services.
- Online Costing immediately identifies the jobs and steps which are major resource consumers.

Programmers/ Systems Analysts:

- By providing feedback on the cost of a run at the time it runs, KOMAND Online Costing raises a red flag for problem areas as they develop.
- Online Costing allows optimization of a new system while it is being worked on.
- Online Costing facilitates an efficient testing program because real costs are shown immediately.

Profit Centers:

- Immediate costing may well be a requirement or desire of customers. No more waiting for batch or periodic billing to know charges.
- KOMAND Online Costing allows bypass of costing for selected jobs.

Users of DP Resources:

- With the job step costing feature, they can identify and analyze the more expensive portions of a job.
- KOMAND Online Costing gives an immediate answer to the question "Is this job worth its cost?"

KOMAND Online Costing is available as an option with the Data Acquisition System (DAS) of the KOMAND Job Accounting System, or as a stand-alone product. It functions with the MVS/SE2 or MVS/SP operating systems.

PACE
Applied Technology, Inc.
7900 Sudley Road
Manassas, VA 22110
(703) 369-3200
TWX 710 833 0852

Your wish is our KOMAND by PACE Job Accounting System.

And Saves Money

System Switch Tidies Up UK Houseware Firm

FALKIRK, Scotland — A kitchen and bathroom appliance manufacturer here has cut order processing time and staff and saved money by changing computer systems.

Carron Co. switched from an NCR Corp. Century 100 computer to a Sperry Univac Corp. 90/30. Founded in 1759, Carron distinguished itself in the 18th century by casting cannons for warships. Today, it makes not only home appliances but products ranging from telephone boxes to counterweights for tractors.

In an effort to become more competitive and efficient, the company in 1978 commissioned outside consultants to prepare a report recommending ways to improve business and production operations.

One suggestion was that Carron adopt a standard costing system that could be implemented throughout its divisions. "We decided to institute a more flexible sales ledger and debtors' analysis to implement a stock recording system and rationalize several different payroll systems," John Muir, Carron's DP manager, explained.

In addition, he said, "We realized we needed to improve the time lag before orders were placed in the production cycle.

"The computer we were then using, an NCR Century 100 model, didn't have the capability for on-line work. We investigated manufacturing control systems offered by a number of computer vendors, but it was clear to us that the only supplier that had a working system suitable for Carron was Sperry Univac," Muir said.

Carron signed a contract with Sperry Univac in January 1979 for a 90/30 computer and the Unis manufacturing control program. Unis is built around four principal modules — master data processor, inventory management, planning and scheduling and work order management.

Delivered early in 1979, the 90/30 consisted of a main storage capacity of 256K bytes, four Univac 8418 double-density disk drives with total storage of more than 230M bytes, two Uniservo Model 10 magnetic tape drives and nine UTS 400 terminals with three printers.

The terminals and printers are distributed among the Domestic Appliances Division (two terminals, one printer), the Baths Commercial Division (two terminals, one printer) and the Stainless Steel and Heating Divisions (three terminals, one printer). Two other terminals are used for developing on-line systems in the programming office.

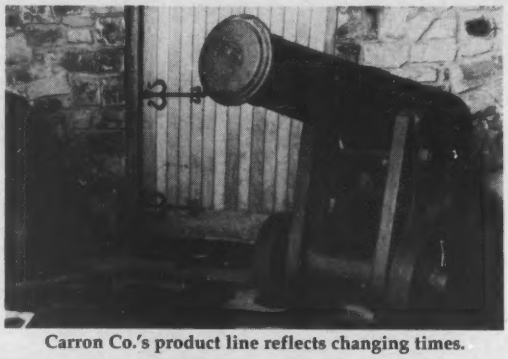
One of the first systems implemented was an on-line order processing system that considerably speeded up the turnaround time for processing the 5,000 or more orders normally received monthly, Muir explained.

"Previously it took an average of 48 hours to process orders, but now we have cut this to the same day," Muir said.

"It only takes about five minutes using the terminals and printers to print and prepare the documentation for the factory."

Using the CRT terminals, operators check and edit the order, price it and feed it to the production cycle. The procedure has resulted in less staff being needed for this operation, he noted.

Within two divisions, on-line inventory control systems have been implemented under the Unis umbrella.



Carron Co.'s product line reflects changing times.

THE INSTITUTE FOR CERTIFICATION OF COMPUTER PROFESSIONALS ANNOUNCES THE

CDP ANNUAL EXAMINATION

SCHEDULED FOR MAY 1, 1982

The annual examination for the Certificate in Data Processing (CDP) will be held on May 1, 1982, at selected test centers throughout the world.

Specific requirements for this year's examination are detailed in the "Certificate in Data Processing Examination Announcement and Study Guide." The study guide and application form for the 1982 examination are available on request from ICCP.

Deadline for Filing Application is March 1, 1982

Please forward the "Certificate in Data Processing Examination Announcement and Study Guide" along with application and test site list.

Name

Street Address

City State or Province Zip Code

MAIL COUPON TO: Institute for Certification of Computer Professionals Certification and Testing Section
304 East 45th Street
New York, N. Y. 10017

UPDATED VSAM

PERFORMANCE WORKSHOP

A TWO DAY COURSE IN
WHAT YOU NEVER LEARNED
FROM THE HARDWARE VENDOR

AN OPTIONAL THIRD DAY
—ALSO AVAILABLE ALONE
DATA FACILITY/DEVICE SUPPORT
DATA FACILITY EXTENDED FUNCTION

BOSTON: Feb. 24, 25, 26
BUFFALO: March 10, 11, 12
PITTSBURGH: March 24, 25, 26

FUTURE WORKSHOPS:
Chicago, Newark, St. Louis, Atlanta, San Francisco, Hartford

Call Mary Evslin for information and reservations: 802 229 0368.
In house presentation available.

Solutions, Inc.
THE VSAM COMPANY
DEPT. 11, BOX 989, MONTPELIER, VT 05602

Select from the largest inventory of used DEC drives in the world.

Available for immediate delivery: RM05s, RP06s.
Call Mary Paul, (408) 942-1212, Ext. 250.

System Industries

System Industries Trade & Exchange

YES

...we have computers for lease.

IBM 3081-D32 (32 meg)
Available March, 1982

Regional Offices

Atlanta	(404) 266-1949
Chicago	(312) 693-2279
Houston	(713) 652-4125
New York	(212) 682-1515
San Francisco	(415) 956-3628

Contact The Yes People

MDFC

MCDONNELL DOUGLAS FINANCE CORPORATION
100 OCEANGATE • LONG BEACH, CA 90802 • TELEPHONE (213) 593-8471

A subsidiary of MCDONNELL DOUGLAS

We broke the tie.

IBM 5280
INCLUDES:
• 128K Memory
• 3 Operator Stations
• 4 Diskette Drives (4MB)
• Data Communications
• 80-cps Matrix Printer
$28,099* $29,210
*IBM prices taken from IBM Service for Consultants, August 1981.
New price taken from "Notice to IBM Customers", December 14, 1981
MDS Series 21
INCLUDES:
• 128K Memory
• 3 Operator Stations
• 5MB Winchester Disc + 1 Diskette Drive
• Data Communications
• 120-cps Matrix Printer
TIEBREAKERS:
• Fixed Disc is faster, easier, more reliable than floppies.
• Expandable to 156MB of storage. (More than ten times greater than 5280's maximum capacity.)
• Develop, compile and execute in COBOL. (5280 executes only.)
• Emulates more terminal protocols than anyone. (5280 communicates in IBM protocols only.)
• Word processing capability rivaling capacity of stand-alone system. (5280 has no true word processing.)
• WINC, our Worldwide Integrated Communications network (an MDS exclusive), enables all the Series 21 systems in your organization to communicate with each other and with your central computer.
$19,052**
** System is available immediately, and may be purchased outright for price indicated, or leased for 3 to 5 years.

02/CW/82

MDS MOHAWK DATA SCIENCES

Building on the Theory of Productivity.

Seven Century Drive, Parsippany, New Jersey 07054, (201) 540-9080

We've just made your decision very easy. For more information about our tiebreaking advantages, return the coupon today.

Name _____ Title _____

Company _____

Address _____ State _____ Zip _____

City _____

Telephone _____

MDS & Series 21 Reg. U.S. Pat. & TM Off.
WINC is a TM of Mohawk Data Sciences Corp.

Fivefold Increase

Accounting Firm Builds Business With Package

BOISE, Idaho — An accounting firm here switched from use of service bureaus to installation of a management accounting package.

Hammons Buchanan & Co. is an accounting firm specializing in job costing for more than 75 Idaho construction companies.

Mary Anne Hammons, part owner, described the firm's decision to automate and eventually purchase Timberline Systems, Inc.'s client write-up and job costing systems.

The firm tried computer service bureaus and then installed a small business system, but more computing power was needed. "It just wasn't large enough. We tried some software out of Virginia, but it also wasn't sophisticated enough," Hammons said.

The Timberline package was purchased after a vendor demonstration at Hammons, Buchanan & Co., according to Hammons.

The company recently upgraded to a Burroughs Corp. B800 with dual-density disk drives. "The computer has enabled our business to become five times the size it was before," she said.

Construction Clients

Hammons Buchanan, which has 13 employees, produces reports for various-size construction firms, some with as many as 165 homes in process. One client moved its bookkeeping operation to take advantage of the Hammons Buchanan data processing service, according to Hammons.

"We picked up a California building contractor who did construction work in Idaho as well as California. They heard about our job costing through the National Home Builders Association, and they sent their controller to Idaho to investigate. He said it was the best package he had ever seen, so they moved him to Idaho to use our system," she said.

Hammons provides a complete breakdown on every account every month for its clients. This includes detailed reports showing every check listed by phase; a printout with a page for each job, showing its estimated cost, the percentage of completion and the cost percentage of completion and the cost per square foot by category; and a summary report with a line for each job, showing all the loan information.

"One thing we always try to do for the contractors is keep the reports as simple as possible. We give them information they need and want. This is what they really enjoy because they can tell at a glance how each job is going," she said.

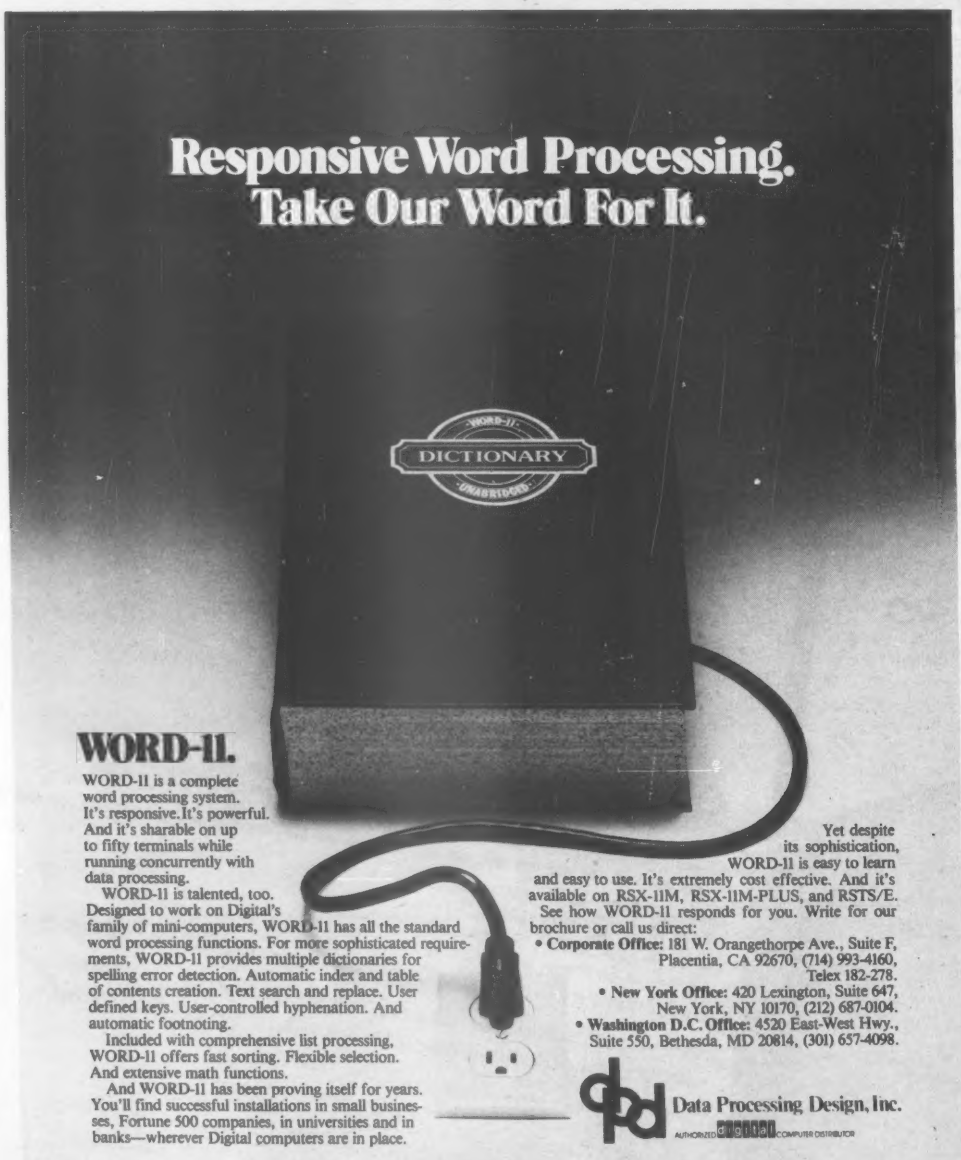
On-Site Terminals

With the new B800 and its data communications features, the firm plans to install terminals in some of their larger clients' offices. Qualification for a data transmission terminal will be based on "the size of the client and the ability of its personnel to input data with a minimum of training," she added.

Setting up a new client on the computer is a systematic process at Hammons Buchanan. The first step is to do a volume analysis.

"Then," according to Hammons, "I usually go out to their place of business, pick up the opening trial balance and break down their work in process by the job and, if I can, by phase. If the client wants to be processed on the computer immediately, I set up a phase 99, which represents precomputer costs. Then they'll have someone in their office go through the jobs and break them down by phases. At the time we update, we move those items out of phase 99 and into the proper phases."

For contractors already on the system, the input is handled on an after-the-fact basis. Coded data is picked up from the contractors' check vouchers, loan closing statements, bank deposits and selling closing statements. "Once a month we print a subcontractors' payment list to prevent duplicate payments," she said.


Responsive Word Processing.
Take Our Word For It.
WORD-11
DICTIONARY
UNABRIDGED
WORD-11.
WORD-11 is a complete word processing system. It's responsive. It's powerful. And it's sharable on up to fifty terminals while running concurrently with data processing.
WORD-11 is talented, too. Designed to work on Digital's family of mini-computers, WORD-11 has all the standard word processing functions. For more sophisticated requirements, WORD-11 provides multiple dictionaries for spelling error detection. Automatic index and table of contents creation. Text search and replace. User defined keys. User-controlled hyphenation. And automatic footnoting.
Included with comprehensive list processing, WORD-11 offers fast sorting. Flexible selection. And extensive math functions.
And WORD-11 has been proving itself for years. You'll find successful installations in small businesses, Fortune 500 companies, in universities and in banks—wherever Digital computers are in place.
Yet despite its sophistication, WORD-11 is easy to learn and easy to use. It's extremely cost effective. And it's available on RSX-11M, RSX-11M-PLUS, and RSTS/E.
See how WORD-11 responds for you. Write for our brochure or call us direct:
• Corporate Office: 181 W. Orangethorpe Ave., Suite F, Placentia, CA 92670, (714) 993-4160, Telex 182-278.
• New York Office: 420 Lexington, Suite 647, New York, NY 10170, (212) 687-0104.
• Washington D.C. Office: 4520 East-West Hwy., Suite 550, Bethesda, MD 20814, (301) 657-4098.
Data Processing Design, Inc.
AUTHORIZED DIGITAL COMPUTER DISTRIBUTOR
Overseas Distributors:
Management Information Services PTY. LTD. Melbourne, Australia
Jenson, LTD. Bristol, England
Network Computer Services PTY. LTD. Sydney, Australia
Systime, LTD. Leeds, England
On-Line Computing PTY. LTD. Subiaco, W. Australia

IOCS Offers Seminar In DBMS Feb. 24-25

NEWPORT, R.I. — A seminar on data base management systems (DBMS) and technology will be offered here Feb. 24-25 by Input Output Computer Services, Inc. (IOCS).

The two-day seminar was designed to provide an understanding of current technological and design approaches to DBMS, an approach for identifying and specifying DBMS requirements relative to these existing technologies and methods and procedures and for evaluating commercially available DBMS packages. During the latter part of the program there will be vendor presentations and analysis of various DBMS approaches.

The registration fee of $215/person includes the cost of workbooks, meeting materials and luncheons. Further information and registration materials are available from IOCS, 400 Totten Pond Road, Waltham, Mass. 02254.

HOW TO GET FROM HERE.

TO HERE.

CODEX. THE COMPLETE NETWORKING COMPANY.

The best way to build a communications network is with the most cohesive, reliable, easily controlled equipment you can get. And you can get it all from Codex.

We have 20 years of experience in data communications. So no type of problem is new to us. But we're constantly developing reliable new solutions which offer savings on data communications costs.

This is part of the reason Codex equipment is used in over 57 different countries. And why networks designed by Codex are used for the world's most critical online applications.

Whatever your data communications needs, a Codex Applications Engineer will make sure the equipment you get is exactly what you need—so you go online faster and get the most cost-effective system for your application. If necessary, we'll even custom tailor our products to suit your special networking requirements.

And if anything should ever go wrong, our Remote Diagnostic Centers let us quickly analyze your problems without having to go on-site. But if you should need us, our Customer Service Engineers are strategically located throughout the U.S. and the world. And when we arrive, we can help solve the problem whether it's with Codex equipment or not.

Codex can handle all your networking needs. See for yourself. Then, if you have any questions, call: 1-800-821-7700 Ext. 885. In Missouri, 1-800-892-7655 Ext. 885.

codex

A Subsidiary of MOTOROLA INC.

See complete networking in action. Visit Codex at Interface '82 in Dallas, March 22-25.

1. CODEX NETWORK SWITCHING AND MANAGEMENT

Our DNCS Network Management and Control Systems monitor, test, reconfigure and report on your network. They gather and analyze information from the most complete set of line monitoring parameters available, so you can predict, correct and manage problems before they affect service.

The IMS 7700 Network Control Switch enables transmission paths to be rerouted at a central site, bypassing problems within seconds and improving network efficiency.

The IMS 7800 Data PABX lets terminal users choose among different hosts and various applications programs residing in them. So you can reduce the number of dedicated terminals you need, and still satisfy your users' needs.

The Network Control Switch, Data PABX, and DNCS systems. They're taking downtime out of the glossary.

2. CODEX INTELLIGENT NETWORK PROCESSORS

Codex multiplexers are the fastest, most efficient ways to clear up congested circuits, improve traffic flow, and save on data communications costs.

Our 6050 Distributed Communications Processor is the most advanced statistical multiplexer in the business. Featuring automatic adaptive routing, user-selectable destination routing, protocol intervention for satellite links, dynamic load leveling, support for up to 64K bps circuits, and remote diagnostics. All of which improve network operation.

Our 6000 Series can handle over 40 different protocols, including SDLC, DDCMP, Bisync, Async, and X.25. Each multiplexer can be adapted to your specific requirements. And each can be upgraded to meet the needs of a growing network, from 2 channels on up.

3. CODEX MODEMS

Codex offers the broadest line of modems in the business, with speeds ranging from 300 to 14,400 bps. Whatever your needs, we've got the solution.

We offer voice grade, wideband and limited distance modems. For leased line, or dial, domestic or international applications. Plus intelligent network control modems that actually allow you to predict network problems and prevent outages.

Codex modems deliver the highest reliability in the business. Everyone undergoes forty separate quality control tests before it leaves the manufacturing floor. It's all part of living up to our 20 year reputation for quality.

4. CODEX INTELLIGENT TERMINAL SYSTEMS

Data entry, online inquiry, timesharing, distributed data processing, and word processing.

Now you can fulfill all these functions with a single cost-effective terminal system. The CDX Series. It communicates with central host resources, timesharing facilities, and other CDX terminals.

The CDX Series features a choice of single and multi-user configurations. Disk and diskette storage systems and a variety of printers. Compatible communications protocols. Industry-standard programming languages (COBOL and BASIC). Programmer productivity aids. Self-test functions, along with remote monitoring and diagnostic capabilities for central site control. Ergonomic features, including a screen that tilts and rotates, and a keyboard that moves.

The CDX Series from Codex. The one system for multiple applications. The one system that let's you put together a totally integrated communications network for optimum efficiency and lower cost. For more information, call: 1-800-821-7700 Ext. 885. In Missouri, 1-800-892-7655 Ext. 885.

codex

A Subsidiary of MOTOROLA INC.

We'll get you through

Codex Corporation, 20 Cabot Blvd., Mansfield, MA 02048/Tel: (617) 364-2000/Telex 92-2443/Codex Intelligent Terminal Systems Operation, Tempe, AZ Tel: (602) 994-6580/Codex Europe S.A., Brussels, Belgium Tel: (02) 762.23.51/Codex (U.K.) Ltd., Croydon, England Tel: 01-680-8507/Codex Deutschland, Darmstadt-Griesham, W. Germany Tel: (6155)-3055/Codex Far East, Tokyo, Japan Tel: (03) 355-0432/ESE LIMITED, Toronto, Canada Tel: (416) 749-2271/Offices and distributors in major cities throughout the world. Member of IDCMA.

Package Puts Freight Handler on Fast Track

MEMPHIS, Tenn. — Choosing the right software is often the most difficult decision facing data processing managers.

In the past, they had two choices — to develop the software system in-house or to retain an outside vendor to develop the software system for them. Now they must also consider a multitude of packaged software alternatives.

Keith Adney, DP manager of Greater South Traffic Service, Inc. here, did not have the option of developing all the company's software in-house because two completely different software systems were required — one to complete specific accounting functions and a second, a unique "traffic" system, to track trailers, shipments and payments nationwide.

Greater South Traffic Service is a shippers' agent that arranges consolidated boxcar and trailer freight shipments for distributors and shippers. The company has been in operation for less than 10 years and has an annual growth rate of 30% to 35%.

"This is a one-man operation. I didn't have the time to develop both systems myself. There is very little transportation software available and none that suited our specific needs. But there are literally hundreds of vendors offering packaged general accounting software for all types of hardware. So we decided to purchase the accounting software we needed and to develop the other system in-house," Adney said.

Adney began his software search by reviewing trade publications that listed or explained the different types of software currently available. He eventually decided to purchase Lawson Associates, Inc.'s accounts payable, accounts receivable, general ledger and fixed assets accounting software to run on Greater South Traffic Service's Burroughs Corp. B1905 computer.

On-Site Training

Lawson's software was chosen because it utilized Burroughs' DMS II data base and Gemcos message control system; it could be easily installed and modified in-house; and Lawson provided on-site training, the source code, support and documentation.

On May 21, 1981, the packages were delivered to Greater South Traffic Service and by June 9, the accounts payable and accounts receivable had been substantially modified to suit the company's needs, training had been completed and the systems were "up and running," Adney said.

"Because all of the modifications were easy to complete, a lot of pressure to get the system running smoothly as soon as possible was taken off of me," Adney said.

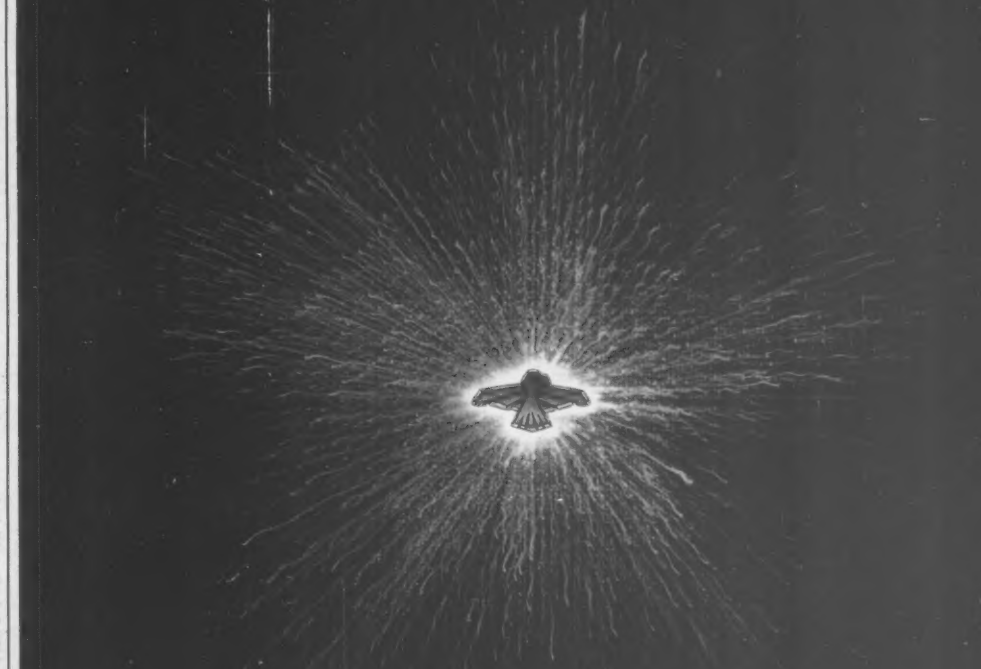
"We only had one major problem — which was caused by installing the accounts receivable and accounts payable systems before the general ledger system. We needed the accounts payable and accounts receivable systems to be implemented right away. So, we installed them before we installed the general ledger system because a six-month backlog of information needed to be entered into the system before it could be used," Adney said.

"Training was very important and Lawson more than met our needs. Because no one in the office had worked with terminals before, the staff was wary. Lawson's people spent two full days training the staff to use the software and become more comfortable with the terminals. This, in turn, made adjustment to the automatic system much easier," he said.

Adney added that the new software has helped to make Greater South Traffic Service's office procedures more consistent and unified. This added benefit has improved office efficiency.

Adney is currently using Lawson's expertise to assist him in the design of Greater South Traffic Services' new traffic system. "Lawson is helping me to design the new traffic system so that it will interface with their accounting software. Both systems use the same data base and lists."

The real-time performance leader.
Gould CONCEPT 32/87



The most powerful minicomputer ever designed.

A device so far ahead of any other that the numbers speak for themselves:

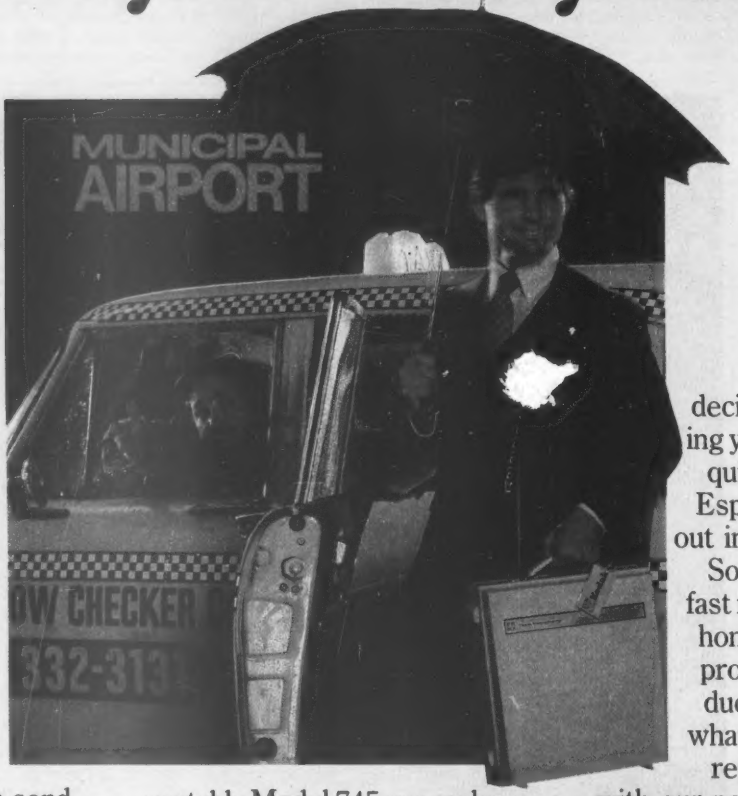
Whetstone 1	3760 Whets (x1000)
Whetstone 2	2297 Whets (x1000)
Real-Time Simulation	22.4 Seconds

Serious about wanting the most powerful minicomputer available? Call Gould S.E.L. We'll match our numbers against anyone's.

Gould Inc., S.E.L. Computer Systems Division
6901 West Sunrise Boulevard
Fort Lauderdale, Florida 33313 1-800-327-9716

GOULD
Electronics & Electrical Products

If you need your office to do business, carry it with you.



Eastman Kodak is a case in point. Many of their representatives use our *Silent 700** Model 745 Portable Data Terminal to get the information that helps them make more effective sales calls.

When you connect our portable to any standard telephone, your host computer can send you the latest news from your home office or out in the field. You can get printouts of inventories. Find out which orders have been shipped and received. Perform quick sales analyses of your customers. Enter your orders and receive a hard copy on the spot. Look at current pricing and promotional information. And the quiet printing operation of our data terminal won't interrupt your sale.

It's easy to see how our portable Model 745 can make any business more productive. The lightweight, compact data terminal with its typewriter-like keyboard can give you a decided edge in managing your sales business, quickly and efficiently. Especially when you're out in the trenches.

So if you're looking for fast response from your home office and a more productive way to conduct your business, do what smart Kodak sales reps do. Arm yourself with our portable.

For more information on the *Silent 700* Model 745 Portable Data Terminal, contact your nearest TI Sales Office or Authorized Distributor or write Texas Instruments, Inc., P.O. Box 202145, Dallas, Texas 75220, or phone

1-800-231-4717.

In Texas: 1-800-392-2860.

TI invented the integrated circuit, the microprocessor and the microcomputer.

TEXAS INSTRUMENTS
INCORPORATED

291098

In Canada, write Texas Instruments Incorporated, 41 Shelley Rd., Richmond Hill, Ontario L4C 5G4, (416) 884-9181. In Europe, write Texas Instruments, M/S 74, B. P. 5, Villeneuve-Loubet, 06270, France, (93) 20 01 01. In Asia Pacific, write Texas Instruments Asia Ltd., 990 Bendeemer Rd., Singapore 1233. Telex RS 21399, or phone 2581122.

*Trademark of Texas Instruments Copyright © 1981, Texas Instruments Incorporated

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 709 FRAMINGHAM, MA 01701

postage will be paid by

CIRCULATION DEPARTMENT

COMPUTERWORLD

375 Cochituate Road, Rte. 30
Box 880
Framingham, MA 01701-9985

Detach here, moisten and seal envelope securely before mailing.

Fold and insert order form (attached through binding) and remittance here.

Bitten by DP Bug

Entomologist Transforms System Into 'Biolab'

PRINCETON, N.J. — Scientists here, who were conducting chemical research regarding agricultural productivity, needed a better way to track results and support the requirements for their chemical studies.

The FMC Corp.'s Agricultural Chemical Group has four laboratories engaged in research of chemicals related to agricultural productivity around the world. Until three years ago, the laboratories maintained all of their data manually. Under this system as many as seven transcriptions of data could occur before it was in final printed form, said technical systems analyst Dwight Folts.

Folts' group looked into the possibility of purchasing a system to handle the biological data, but found the cost and length of time to install proposed products prohibitive. Using the advice of an independent consultant, Folts' group decided to use American Used Software Co.'s DRS data base management system to develop their own system, called Biolabs.

Firm Picks DEC

The company purchased a Digital Equipment Corp. PDP-11/34 and the DRS for use on-site at the laboratories, which then were located in Middleport, N.Y. They collected data on the DEC system and shipped it via Decnet to a DEC VAX at the firm's Corporate Chemical Research Laboratories in Princeton, where the laboratories are being moved.

Folts said that running in native mode on the DEC VAX, DRS was able to interface with statistical packages that manipulate the data. Multiple indices were built and discarded at the convenience of the scientist with no reorganization of the data base necessary.

"Without DRS, we couldn't screen as many compounds as we do now and maintain control over the data," Folts said. "The number of species under study in our laboratory has nearly doubled, with no addition of technicians or clerical help."

In Middleport, the data was collected by technicians using terminals that were wheeled about the laboratories and greenhouses, Folts said. Some statistical analysis was performed and daily progress reports were made on the studies.

Once the data reached the DEC VAX in Princeton, via Decnet, it entered a DRS data base, Folts continued. Twelve terminals in Middleport were on-line to this data base. Scientists and management personnel were given three to four hours of training before being turned loose on the data base to make their own queries and print their own reports.

Folts said he has taught about 40 people to use the system. "Six commands and you have all you need to know for 90% of your requirements." Although he is an entomologist and not a DP professional, Folts developed the Biolabs system himself. He said it is providing reports on time, giving the scientists more information, much sooner than before.

Specialized Reporting

Specialized reporting for management is also more flexible, he explained. For example, Folts produces a year-end summary of an entire year's screening of chemicals. He estimates that programming the search alone would take at least 40 lines of Fortran code. This is accomplished in one report writer line using DRS.

Four data bases are maintained in the Biolabs system: insecticides (50K-byte records), nematocides (30K-byte records), fungicides (100K-byte records) and herbicides (200K-byte records). Folts also is able to offer a search service for complex criteria-based retrievals of data, or for people who do not want to do it themselves.

FMC is planning to use DRS for a Formulation Information System that will contain data on thousands of formulations, which are the "carriers" for the chemicals, Folts reported.

Graphics Index Now Available

SUDBURY, Mass. — *The 1982 Computer Graphics Suppliers Directory* is now available for computer graphics end users, systems integrators and others with an interest in the field. The 100-page directory lists significant computer graphics suppliers in the U.S. and Canada.

The main section lists vendors alphabetically and gives the year founded, address, telelphone number, chief executive officer, sales and employees. It also includes a brief description of the company's products and services.

A second section comprises a computer-processsed cross index, lists of vendors by products and services and type of technology employed.

The directory is available at a prepublication price of $34 or $47 prepaid after publication from Stanley Klein, Publisher, Computer Graphics Directory, 730 Boston Post Road, P.O. Box 392, Sudbury, Mass., 01776.

COMPUTERWORLD

OA

MEMO TO: CW Subscribers

RE: Your first issue of Computerworld OA is coming March 31, 1982.

FROM: Bob Ziegel, Vice President Special Publications

The office of the future we've dreamed about is here today. And now more than ever, staying abreast of changes in the rapidly expanding office automation field is important to the success of every organization. To guide you through the latest OA developments, we're announcing our newest publication, Computerworld OA. The first of four issues for 1982 is scheduled for March 31st.

Every Computerworld subscriber will receive a copy of these special issues as an extra bonus and more copies will be distributed at major shows in 1982. OA is edited by Ann Dooley and here are just some of the major topics you'll be reading about in our first issue:

.Find out who are the OA users and what OA applications are available to them.
.Read about the latest OA implementation strategies.
.Get a thorough overview of decision support systems.
.What are the management issues of integrating OA into the organization?
.Who are the major vendors and how do their products compare?
.Compare standalone WP vs. clustered WP functions--which is best for you.
.How has OA made the best use of personal computers?
.If you're moving up from WP--what's the next step?
.Find out how to set up an ergonomic office.
.An overview of local area networks.
.What's available in prepackaged software for the OA user?
.Get the latest information on voice mail systems.
.The lack of standardization and what users can do to compensate.
.Computer graphics--how to produce your own slides.
.In-depth evaluations of new OA products.
.Plus--a feasibility cost justification story.

The format of these four special Computerworld OA issues will be the familiar "tabazine" developed for CW Extra! Each issue will be tabloid size with magazine format for editorial content and advertising. Covers will be printed on glossy stock, and supercalendared, high-quality newsprint will be used on the inside.

Best regards,

Bob Ziegel

P.S. FOR ADVERTISERS: You can reach the people who are responsible for taking their companies into the the office of the future with your ad in Computerworld OA.

Advertising close is February 19th and we'd be glad to give you more advertising information--as well as complete details on our subscribers and readers. Just contact your local Computerworld Sales Office, or, call Bob Ziegel, Vice President Special Publications, CW Communications/Inc. at (800) 343-6474.

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
A publication of CW Communications/Inc., the world's leading publisher of computer-related newspapers and magazines.

BOSTON	CHICAGO	NEW YORK	SAN FRANCISCO	LOS ANGELES
Chris Lee	Dave Dolber	Mike Masters	Bill Healey	Jim Richardson
Ed Marecki	Chris Lee	Peter Senft	Barry Milione	Bob Hubbard
Joe Fitzhugh	Newt Barrett	Doug Cheney	Ruth Gordon	Delbra Pendergrass
Kathy Doyle	Jan Raska	Ray Corbin	Linda Tucker	Beverly Raus
Diane Sukey	(312) 827-4433	Marge Corcoran	Eileen Dunn	(714) 556-6480
(617) 879-0700		(201) 967-1350	(415) 421-7330	

Books U.S. and Canadian Passengers

System Makes Cruise Booking Smooth Sailing

Special to CW

MIAMI — For the past several years, computer-based reservations and travel systems have almost entirely been reserved for the airline industry.

At the moment, the two major automated reservations systems — American Airlines' Sabre and United Airlines' Apollo — account for about 65% of all flight bookings. And a number of other airlines have introduced or are in the process of developing computer reservations systems to compete for travel agents' attention in the highly competitive reservations market.

However, computerized booking systems are not solely limited to air travel.

Late last year, Amtrak finished revamping its computer-based ticketing and information system and introduced Arrow — an IBM-based system that puts more terminals into remote locations and is supposed to speed the reservations process [CW, Dec. 21].

At about the same time, Scandinavian World Cruises, based here, put into operation a computer-based passenger service and operations system that can book passengers from every U.S. and Canadian travel agency. Designed around a Sperry Univac 90/40 computer and a Datapoint Corp. automatic call distribution system, the operation is considered to be the most sophisticated in use by any cruise line and a second cousin to the systems used by the airline industry.

The cruise reservations systems operates from the port of Miami and can provide immediate confirmation and information for passengers through their travel agents, according to Klaus Wombacher, vice-president of passenger services.

A special feature of the system is that it allows cabin numbers and reservations to be assigned on a first-come, first-serve basis. The 90/40 computer does this by holding or delaying a reservation for at least two minutes — the moment information is entered — preventing passenger conflicts.

The system issues each passenger a reservation number as soon as a reservation is entered. This provides staffers immediate access to all information on specific passengers and accommodations, including dining assignments, special services such as wheelchairs or bedboards and cancellations.

Additional Information

Other information available through the computer-based cruise system includes hotel packages, land excursions and automobile rentals. The system can also supply cruise management with marketing and research data to find out who is traveling on the line's four ships and how to better serve them.

Since the system was designed to operate seven days a week, and will have to handle an estimated 750,000 passenger bookings per year by the end of 1982, the system is backed up by another complete 90/40 computer and reservations program, Wombacher explained.

The Datapoint communications system handles call rotation and records data on all incoming communications.

The entire communications and reservations system cost more than $1 million, Wombacher observed.

THEY SAID
IT COULDN'T BE DONE
BUT DATABASIC
DOES IT...
CREATES PERFECT
MINIATURES
OF PRODUCTION
DATABASES
FOR FAST,
NO CODING, TESTING.
DATABASIC IS A PRODUCTIVITY BREAKTHROUGH.
With no coding you can now manipulate your databases in ways never before possible. Databasic provides the capability to master your database problems. It requires no ad hoc programming.
DATABASIC MAKES SHORT WORK OF TESTING.
All it takes is a single parameter card to create perfect subset databases. IMS logical relationships and application logical relationships are resolved quickly and efficiently. And you can print all the segments any time you need them, effortlessly. Now for the first time, you can change a key or modify a segment in any existing database in minutes. Databasic will sequence, initialize, load and unload any way you want ... automatically.
DATABASIC SPEAKS YOUR LANGUAGE
Whether you use COBOL, PL/1 or Assembler, whether you operate on-line or in batch, Databasic will work for you. Available now for IMS-VS, CICS DL/1 and DOS DL/1.
To learn more about the exciting things Databasic can do for you, call for the informative story on "DATABASIC DBMS PRODUCTIVITY BREAKTHROUGH"
Call Consumer Systems today at
312-325-2102
extension 210.
DATABASIC
Consumer Systems
A generation ahead
2107 Swift Drive
Oakbrook, Illinois 60521

Senator to Speak At D.C. Seminar

WASHINGTON, D.C. — "The Emerging Telecommunications Marketplace," a two-day seminar on the revolution in the telecommunications industry, will be held March 22 and 23 at Loew's L'Enfant Plaza here. The keynote speaker will be Sen. Robert Packwood (R-Oregon), chairman of the Senate Commerce Committee.

Sponsored by Phillips Publishing, Inc., the symposium will examine the medium- and long-range future of the telecommunications industry as seen against a background of technical developments, intensified international competition and domestic deregulation.

"Technological developments" is the theme of the first day, with panels of speakers examining cellular radio, interactive cable television, digital termination systems, alternative intercity networks and the resellers market. The second day of the conference will focus on "Governmental Regulation and Intervention — Market and Economic Impacts."

Packwood, who is author and principle sponsor of S. 898, the Telecommunications Competition and Deregulation Act of 1981, will deliver the luncheon address the second day on "Domestic Competition and the New International Climate."

The cost of the seminar is $595 billed and $565 prepaid. More information is available from the company at Suite 1200N, 7315 Wisconsin Ave., Bethesda, Md. 20814.

paradyne

Automated Network Management System... The New Generation

ANALYSIS

4430

From within the Analysis product line — the most advanced automated network management system available today — evolves the newest generation in the Analysis lineage... Analysis 4430.

Paradyne's 4430 automatically monitors your network conditions allowing your operator to analyze problems and initiate restorative action. Unique features of the 4430 are:

TROUBLE TICKET MANAGEMENT...with history file, custom designed, changeable screen formats and response time alarms.

MULTIPLE INQUIRY CAPABILITY...supports multiple operator stations.

INVENTORY MANAGEMENT CAPABILITY... means your operator has the capability of maintaining the network inventory and immediately locating any component of the teleprocessing network.

REPORT GENERATOR...allows your user to generate detailed or summary reports using any data in any file.

DATA BASE MANAGEMENT...allows your user to define files, the keys into those files and the relationships between the files.

EARLY DETECTION OF DEGRADED LINES ...unique to Paradyne, will increase your uptime.

ACCESS TO THIRTY TWO SECURITY CODE LEVELS...is available to allow multiple levels of access and privacy.

The 4430, modular in structure, changes and grows as your network needs change and grow. **The Datalyzer option** provides inservice parameters with COLOR graphic displays. **Other options** include multiple local or remote front ends that monitor several networks and numerous input/output devices.

As new communications products are introduced by Paradyne, you may be assured that your Analysis 4430 will continue to be the network management system that grows with the future.

We're PARADYNE...THE Data Communications Company of the 80's.

If you would like to know more about Paradyne's products, write on your letterhead or call:

Paradyne, 8550 Ulmerton Rd., Box 1347, Largo, FL 33540, (813) 530-2000;
Paradyne Canada Ltd., (416) 494-0453;
Paradyne (U.K.) Ltd., (07535) 56712;
Paradyne G.m.b.H. (West Germany), (0221) 491078;
Paradyne Japan, (03) 245-0431.

paradyne

Our new guarantee covers two lifetimes.

A lifetime of performance. All Memorex® disc packs and cartridges are now warranted to be free of defects in material and workmanship and will perform according to read/write capability for as long as they're properly used and maintained. Any product that fails to do so will be repaired or replaced by Memorex. No hassles, no excuses.

A lifetime of service. Secondly, you get a lifetime of technical assistance from Memorex. We'll help you isolate and correct any problems that relate to the operation of our disc packs or cartridges for as long as you use them. It's that simple. To find out more about our new* Comprehensive Guarantee of Satisfaction and Service, call or write: Marketing Manager, Memorex Rigid Media and Components Division, 1125 Memorex Drive MS-0064, Santa Clara, California 95052. Telephone: (408) 987-0267.

MEMOREX
A Burroughs Company

© 1981 MEMOREX CORPORATION. MEMOREX IS A REGISTERED TRADEMARK OF MEMOREX CORPORATION.

*Effective 11/1/81

Auto History Provides Key

System Drives Auto Dealer To Better Service

SPRINGFIELD, Ohio — Remember those long lines you faced at your automobile dealer's service desk the last time you needed some car repairs? The lengthy and time-consuming paperwork that normally is involved is being eliminated by a dealership here that is using a computerized hardware/software system to maintain customer data.

The Service Merchandising System (SMS) was created by the Reynolds & Reynolds Co. to provide a data base designed to enable the service department to store and retrieve information for the dealership. The I/O devices used with the system are General Electric Co. Terminet 200 Forms Access printers. One of its users is Jim Foreman Pontiac/Datsun here.

Business manager Roger Williamson described the workings of the system: When a customer pulls into the dealer's service department, a service adviser notes the last eight digits of the vehicle's identification number. He keys this number into the printer, which produces a printout on that vehicle providing such data as the customer's name and address, pertinent vehicle information and services previously performed, along with the date and mileage and what service technician performed the work.

The final portion of the printout contains the "service menu" for recommended work based on elapsed time and/or mileage, Williamson explained. "With this information, the service adviser can greet the customer by name and confidently discuss needed service work." Simultaneously, a second printer produces a customized repair order for use by the service technician, he continued.

Forecast and Follow-up

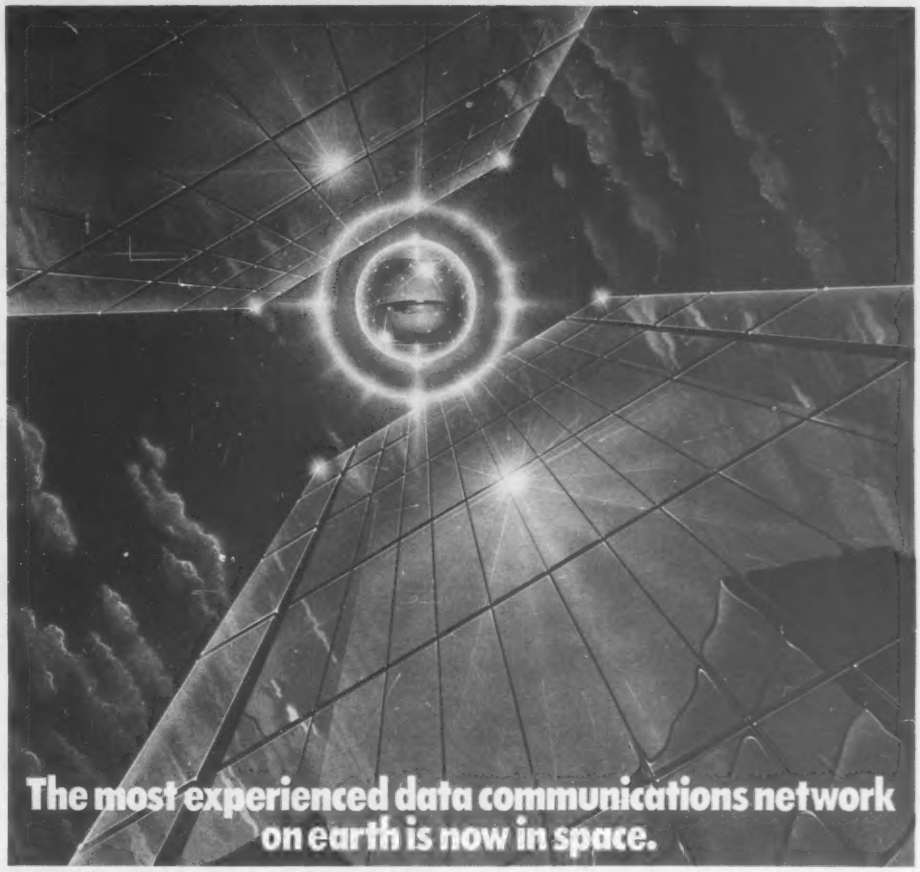
SMS also was designed to enable the dealer to mail customized forecast and follow-up post cards to service customers. The forecast card lists required work and the date by which the service should be completed. Williamson noted that this reminder is especially helpful during a vehicle's warranty period.

Follow-up post cards are sent to customers who have not had any service work done for a specified period of time. Both cards are printed and addressed by the printer, which also produces self-stick address labels for other merchandising messages the dealer may wish to mail to customers. The system stores each vehicle's complete service history.

"SMS allows our service managers more time to sell service, since they spend less time manually filling out paperwork," Williamson said. "Our customers also like the system, since it saves them time. Many of our customers are pleasantly surprised and favorably impressed by the amount of information we have on their car." Williamson said service department personnel also are pleased with the system. "Our two printers have held up well, despite exposure to high summer and low winter temperatures in our service facility. Now that we've seen what these printers can do for us, we wouldn't want to return to our old manual system. Every form we print on the printers is highly legible, allowing us to eliminate errors caused by illegible handwriting."

Another major benefit of the system, according to Williamson, is that it ensures that the correct vehicle identification number is used for all service work. "This is especially important for work done under warranty. If we were to submit warranty reimbursement paperwork to General Motors Corp. with an incorrect vehicle identification number, the order would be rejected until the correct number was provided, delaying our repayment."

A co-manager reviews a "service menu" printout with a customer.



The Cylix data communications network service, using two satellites in geosynchronous orbit, offers many leased line users significant savings, better reliability.

We're in space because it costs less and is more reliable to send messages by satellite than by leased lines.

That's how Cylix Communications Network can offer you a lower-cost alternative to conventional means of data transmission.

If your terminals are widely distributed, Cylix could save you plenty.

Cylix is the only network service that routinely takes full responsibility for error control from user premises to user premises. User operator involvement is rare. You don't need to buy diagnostic equipment. And Cylix diagnostics don't interfere with user data.

For reliability, our central facility is earthquake and tornado-proof, with a back-up power supply. There's back-up for all processors, antennae, RF and IF radio equipment, too.

Cylix offers on-line, transaction-oriented, high-speed (up to 9.6 kilobits/second), high-volume (up to 100 million characters/month per remote), high reliability data-only communications with IBM 3270, X.25, Burroughs Poll/Select and other protocols.

We've been in networking for a decade, and now transmit over 400 million characters of information daily for users in over 300 cities. We can do it for you.

Starting for as low as $345/month per remote site. If you built your in-house network to cut costs and improve reliability, it's time you took another look.

Cylix can help, with a simple way to figure your true network costs: our free *Network Cost Analysis* brochure. Why not beat AT&T's rates? To get a copy, return the coupon, or call Carl Sievert at (901) 761-1177. You belong in space.

NAME _____

TITLE _____

COMPANY _____ PHONE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

CYLIX™
COMMUNICATIONS NETWORK
AN AFFILIATE OF DATA COMMUNICATIONS CORPORATION.
Department CW, 855 Ridge Lake Boulevard, Memphis, TN 38119

Digital's software support teams. They're good. They're fast. And they're right by the phone.

Every call handled by a specialist. Every specialist backed by a team.

When you have a software question, time is of the essence. Your business could depend on a fast answer.

That's the reason behind Digital's Telephone Support Centers in North America, Europe, Japan, and Australia.

If you subscribe to this service, you can call the center if you have a question. As soon as we take your call, we'll retrieve your customer file electronically from our data base and put you in touch with a software specialist, who will be backed by a team of experts in your particular Digital operating system.

Often, this specialist can handle your problem right away. If not, other members of the team will be consulted automatically.

From then on, the team is responsible for getting that problem resolved. And they'll stay on it until they do.

It's all part of Digital's commitment to provide you with the most advanced, most responsive, and most comprehensive software support anywhere.

For more information about Software Product Services, contact your local Digital office.

digital

We change the way the world thinks.

Acquires Third Package

Distribution Department 'Shops for Logic'

COLUMBUS, Ohio — Borden Chemical's Distribution Department here has been responsible for the purchasing of three computer software packages since 1974.

The first package was Union Carbides' Rams system and was used to store and retrieve transportation rates.

"The decision to computerize our freight rates was made because the volume of rates and the frequency of changes was too great to maintain manually. After looking at the few packages available at the time, Union Carbides' was chosen because it best suited our needs," systems and services manager Jerry Goss said.

The package was used with few modifications until January 1981. At this time Transportation Concepts and Services (TCS) Compurate II rate maintenance package was installed and took the place of the Rams package.

For the past three or four years, the company's Distribution Department has been planning and developing an internal freight audit and payment system, with the heart of this system being its freight rate data base.

We visited companies with Rams packages and freight payment systems built around the Rams data base in hopes of buying their system or at least getting a feel for what it might take to build our own. It was looking very costly to keep the Rams and try to build something about it. So we started looking for alternatives," Goss explained.

"I had worked with Les Probst and TCS prior to coming to Borden. I knew he had a pretty good system for storing and maintaining freight rates and that he had a rating package that would use the rate file to audit and check rates [Compu-Rate IV]," he continued.

The key to getting the rate data base package (Compu-Rate II) was economics and ease of use, he noted. It was estimated to cost $10,000 per month to run Rams on their corporate machine. "I could only update once a week and there were over 50 programs to be maintained. I can run Compu-Rate II on the same machine consisting of five major programs as often as I want for less than $2,000 per month."

The biggest hurdle to overcome was the conversion of the Rams rate file into the TCS format, Goss said. "We insisted on a computer conversion of the file because at the time we were maintaining over 500,000 rates and did not want to manually reload these rates.

"TCS wrote the conversion program and successfully converted the file," he explained. The major modification to Compu-Rate II was in going from a two-file concept to a one-file concept. The Rams system stored all types of rates on one point-to-point file (class, mileage, commodity, column commodity and so on). Compu-Rate uses a two-file concept — one file being all class rates, the other being point-to-point rates.

"We in Distribution did not want to maintain the 'universe' of class rates, only those rates that apply to us. TCS said there was no problem and went ahead and made the modification," Goss said.

This January Borden will begin testing and implementing the TCS Compu-Rate IV rating package in conjunction with Cass Bank of St. Louis. Cass will pay the freight bills and capture data to be sent to Borden and the TCS rating package. The package will check the freight charges and any incorrect charges found by the computer will be reimbursed in full to Borden by the bank upon completion of formal correction notices.

"We have resources within the company that we can turn to, but when economics and time factors warrant, we will buy a package rather than develop it ourselves," Goss said.

Pima MIS Talk Set For April 21

ARLINGTON HEIGHTS, Ill. — The 1982 Paper Industry Management Association's (Pima) management informations systems (MIS) conference will be held April 21-23 at the Westin Oaks in Houston, Texas.

This year's keynote speaker is Dr. John F. Rockart, director of the Center for Information Systems Research and senior lecturer on management science at MIT. His address will be on the "Critical Success Factors for Information Processing."

Paul A. Strassmann of Xerox Corp. will address the paperless office during a plenary session at the conference.

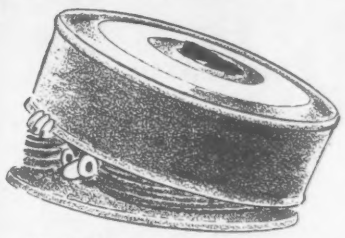
In addition, the Pima conference will feature a director's panel comprised of top MIS directors discussing their companies strategic plans for the next five years.

For more information, contact Bruce Brammer, Paper Industry Management Association, 2400 E. Oakton St., Arlington Heights, Ill. 60005.

FastDASD™ is the only software designed to improve disk pack response time.

FastDASD revolutionizes the tasks of DASD reorganization. It's the only product that combines many time-consuming functions in one completely automated process.

By reducing disk arm/head movement, FastDASD gives you significant improvement in batch turn-around and on-line response time. In fact, *users have reported as high as 90% improvement in these areas.*



Gremlins lurking in your DASD?

PLUS MUCH MORE. FastDASD does defective track analysis, HASP tuning, PDS Directory/Member Reorganization, and VTOC placement, features you probably didn't think you could get from just one product.

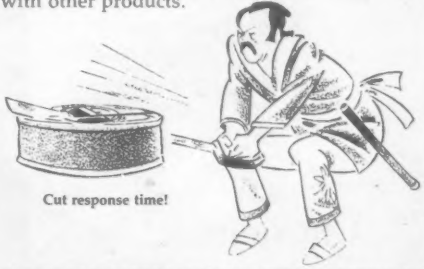
Make your DASD perform like a dragster—not a drag.

IN ADDITION, FastDASD generates over 20 formatted reports, supports all OS operating systems, and automates the entire process of reorganizing DASD through interfaces with other products.

And FastDASD is the only measurement and analysis tool that offers all these vital features:

SIMULATION—To determine percent of improvement that will result from recommended reorganization.

CROSS-VOLUME ANALYSIS—To aid in load balancing.



Cut response time!

CALL
703-471-1545
or fill out the coupon and send for your FREE brochure. See for yourself why FastDASD is your DASD's best friend!

FastDASD SOFTWARE CORPORATION OF AMERICA
the DASD PERFORMANCE AND REPORTING SYSTEM

☐ Yes, send me more information on improving response time with FastDASD.
Software Corporation of America
455-A Carlisle Drive
Herndon, VA 22070
703-471-1545

Name_____ Title_____
Phone_____
Company_____
Address_____
City_____ State_____ Zip_____
OP SYS_____ CPU_____ #DASD spindles_____

Net Gives Bird's-Eye View of Jet Production

FORT WORTH, Texas — General Dynamics Corp. has constructed an international computer network that organizes the production of its F-16 fighter jet and saves the company $35,000 yearly.

The international network, linking IBM computers in the U.S. and in Europe, continually monitors locations, movements and status of all critical parts used in the aircraft. It also contributes to the efficient, uninterrupted production of the sophisticated F-16, the vendor said.

"We call the new distributed computer system a 'parts tracking network,' but it also provides a powerful assist in meeting assembly schedules for the F-16s," Frank Uhl, manager of operations at General Dynamics' central data systems center in Forth Worth, Texas, noted. "It helps put the right parts in the right places at the right times to maintain crucial production timetables and to hold production costs within budget.

Production Delay

"If a part is not available when it is needed at any of the three widely scattered assembly plants in Texas, Belgium and the Netherlands, we suffer a production delay. Either that or we incur added expense to install the part after the aircraft has moved along to another point on the assembly line. With the computer tracking network we avoid both problems," he continued.

In addition to its role in helping to keep F-16 production on target, the network also ensures the security of highly sensitive information. Key components of the parts tracking network include an IBM 3033 computer at General Dynamics' data center here. Also installed is an IBM 8100 Information System, used for network systems and applications development. Another 8100 at the Fokker F-16 assembly plant near Amsterdam is linked to the Forth Worth 3033.

A network of IBM CRT and printer terminals is on-line to the computers to serve data entry and inquiry needs of personnel at the Forth Worth and Fokker assembly plants. On-line terminals linked to the Fokker 8100 system also are located at another F-16 assembly plant operated by the Sabca and Sonaca companies in Gosselies, Belgium and at General Dynamics' European headquarters in Brussels.

A data transmission line, part of the cost of which is borne by the U.S. Air Force, connects the computers at Fort Worth with the Information System at Fokker some 5,000 miles away.

The system even compensates for time differences that exist between the U.S. and Europe to reflect actual F-16 parts and assembly status at all locations. When the system's IBM IMS data base management software comes up each morning there is an automatic transfer of updated data from Forth Worth to Amsterdam and vice versa.

Tracking Parts

Tracking of the parts begins as the part goes into production at its manufacturing source. It continues as the part moves through production and the expected ship date is established, then follows the part as it builds up into a component or subassembly, leaves the production plant, arrives at the assembly plant and is installed in an F-16.

When the part leaves either Fort Worth or Europe, an entry is made to the computer files to show that it has been shipped. Instant access to the parts tracking data is provided by the terminals on-line to the Forth Worth or Amsterdam computers. Personnel at any of the assembly plants can check the status of a part simply by entering the part number or the serial number. The system informs the inquirer if the part has been shipped and if it has arrived at the assembly plant and is on hand. If neither has happened the system indicates that the part should be ordered.

"With the information at hand, assembly scheduling is smoother and there are no surprises to cause costly line delays," Uhl said.

Great Printers

Don't Have to be Ugly.

Or Heavy.

Or Expensive.

Or Unreliable.

Or Loud.

Or Hard to Service.

Or Poorly Made.

Or Huge.

Or Unavailable.

The 2000 Team from General Electric

Mail today to: General Electric Company, TermiNet 794-65 Waynesboro, VA 22980 Telephone: (703) 949-1170

☐ Send me more information about the new GE 2000 series printers.
☐ Have a sales representative contact me.
☐ I'm interested in a GE 2000 printer demonstration.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

We Bring Good Things to Life

GENERAL ELECTRIC

But Maintenance Proves Problem

Ready-Made Software Passes College's Tests

WESTMINSTER, Md. — Is store-bought software less expensive than the homegrown variety?

The question is debatable, according to Emily G. Johnston, computer center director at Western Maryland College here. On the surface, it would seem that developing software in-house is more cost-effective than buying ready-made packages for the simple reason that the programming staff is already on the payroll and will be paid anyway, she explained. If you buy software you are spending their salaries plus the cost of the package.

"All of us have some in-house software, and all of us have requirements which cannot be met by prepackaged software," she said. The programming staff is responsible for that by default, as well as for maintenance and updates to all of the other software and systems. When the burden of developing in-house payrolls, budgets and data base management systems is added, it seems an impossible load for existing staff, she said.

Adding personnel or contract programmers to accomplish these tasks is likely to be more expensive in the long run, she said, adding "And what do you do with the extra staff after the packages are finished?

"In reality, one does not buy software at all; one buys time," Johnston said. Additional staff, outside contractors or in-house staff all require time to prepare the requirements documents to be implemented. In-house computer time for testing and debugging, as well as some amount of real-time, is necessary for the job to be completed. "All this time is what you get when you buy a software package."

Even buying software requires some time from the purchaser, Johnson said. It is necessary to rigorously define the organizational requirements by researching the needs of the end users. Then the potential user must sift through a reasonable number of descriptions of candidate products until at least three are selected that nominally satisfy those requirements. Those three should be installed and tested thoroughly.

Western Maryland College over the years has purchased a number of software products including Management Science America, Inc.'s (MSA) payroll package.

In general, the college has been pleased with the performance and capabilities of these products, according to Johnston. In some cases they have increased available CPU time, decreased wasted disk space and enhanced productivity.

Cost/benefits are difficult to assess in a nonprofit environment, she explained. "The bottom line for us is how much service we can provide our institution per dollar in our budget. Some of these software packages have been responsible for at least a fourfold increase in that measure."

Some Problems

Service and maintenance have not been entirely satisfactory with the packages, according to Johnston. One problem arose with the MSA payroll system, a massive collection of code.

"Our analyst has four stacks of listings each three feet high on the floor in her office just from compilations. Fairly extensive changes had to be made in the system to make it fit on our computer," she said. MSA's payroll package requires three tape drives, but the college has two. Several sections of the package, including labor distribution, require 256K bytes of memory. This forces the college to reload the system with a two-partition supervisor whenever these sections are run.

MSA's support for the package costs the college $4,800 per year. Johnston complained that new releases are promised one year and delivered the next and that program updates for time-critical applications such as W-2 forms are delivered a week before they have to be run, with the state information omitted from the federal tape report format. When a new release is provided, it generally comes with a letter that says the old release will go off support within the month, she added.

"Even though the payroll system itself is a nice piece of software and more than satisfies our needs, had I known we were letting ourselves in for all of this I would have chosen another package," she said.

Johnston said that she attempted phone support contract with MSA because occasionally one hits snags, which 10 minutes on the phone would be more than adequate to cure. "Even if it had to be paid for in whole hours it would be worthwhile to the customer and would cost much less than a contract." However, MSA was not interested in establishing such a contract with the college.

"If there is a hitch in these outside software products, it is maintenance," according to Johnston. Charges are generally 10% of the current purchase price, and that is not necessarily what you paid for it, she continued. And there are no discounts on maintenance anywhere.

Word Processing for DEC Systems

HAMILTON

- Spanning the DEC Product Family with a wide variety of system configurations, ranging from single user to large multi-workstation environments.
- Software designed to run under VMS, RSX/11M, RSTS/E, or its own operating system.
- Providing full word processing capability with the emphasis on ease of operation and flexibility.
- Available as layered product or bundled with system hardware for a dedicated word processing system.
- Facilitates integration of Word Processing and Data Processing files.

• FEATURES INCLUDE:

Auto Center
Auto Underscore
Global Search/ Replace
Auto Decimal Alignment
User Defined Keys
Auto Page Numbering
List Processing
Paragraph and Abbreviation Library
132 Character Wide Screen
Document Orientation
Dynamic Nature
"Menu" Driven
Operator Prompting

Auto Decimal Alignment

- Excellent Price/Performance ratio for your system dollar.
- Training and Support

WRITE OR CALL FOR INFORMATION AND LITERATURE

SYSTEMS WITH SOLUTIONS
HAMILTON
Hamilton Avnet
Pearl Court,
Allendale, N.J. 07401

TOLL FREE 800-631-0298
IN NEW JERSEY
201-327-1444

LONDON PARIS DÜSSELDORF TORONTO NEW YORK

DEC, VMS, RSX/11M, RSTS/E, MACRO-11, PDP 11 are trademarks of Digital Equipment Corporation

Fabric House Cuts Application Checklist Pattern

NEW YORK — Doral Fabrics, Inc., an importer and wholesaler of drapery fabrics here, has developed a checklist for evaluating how to approach new applications for use on its system.

The first step in evaluating applications, according to Otis A. Whitehurst, manager of information systems, is to ask several questions of the company and the application such as: "Is this a standard application common to a variety of companies or is it special to our company or industry? How important is the application? Should we push getting the application on-line or can it be worked on over a period of time with other applications?"

Next, the company gauges whether there are limitations based on computer hardware or interfacing with other current applications and whether the expertise and time is available among the current DP staff to write the application in-house.

"In short, if we were considering an application that is fairly standardized [payroll] with little or no interfacing with existing applications, faced with a shortage of time, we would probably choose to buy a software package," Whitehurst said.

Aspects Evaluated

Doral tends to evaluate the following aspects of a package under consideration:

- Cost (not necessarily the first priority).
- Size of installed user base (Do they use systems similar to Doral's?).
- Availability and cost of personnel to customize package.
- Modifications necessary in Doral's method of doing business to use the package.
- Does the package include what is needed?
- Documentation.
- Stability of company offering package.

"Don't be afraid to contact other users of the application, if available," Whitehurst advised. "Most are more than willing to talk with you. Finally, don't start the search for a package until you know what you need. Develop an outline of what the application must do. The outline can always be altered later."

Whitehurst said the experience at Doral has been that it takes less time to get a software package on-line on its Hewlett-Packard Co. 9830-B minicomputer than to write the new application from scratch. "But we have had to sacrifice some of the features we wanted and have had to adapt our methods of doing business to fit the package in some cases," he said.

1985
$32.4 billion

TERMINAL PERFORMANCE

1980
$12.7 billion

Computerworld's March 29th Special Report configures out "Data Communications Terminals" for you.

The terminal market is anything *but* terminal. In fact, the market is exploding as more intelligence is being built into terminals, giving end-users a wider range of functions and greater flexibility of applications. To illustrate this growth, International Data Corporation, the world's leading information industry market research firm, projects that the installed value of data communications terminals will jump from $12.7 billion in 1980 to $32.4 billion in 1985.

This Special Report will guide you through the latest developments in the terminal industry.

You'll read tutorial essays, accounts of user experiences, reviews of current products and speculations about the future — all edited by Bruce Hoard and Phil Hirsch. And you'll be getting the most up-to-the-minute information on:

- *How to configure networks for multiple applications in your organization.*
- *How terminals are making computers more responsive to users' needs.*
- *New ways for getting the most out of dumb terminals.*
- *The best guidelines for evaluating terminal equipment.*
- *The latest developments in automatic teller machines.*

If you work with data communications terminals or need to know about them, March 29th is your issue. And if you're a manufacturer or marketer of data communications terminals or systems, don't forget March 12th — that's the last day to get ad materials into *Computerworld*. Remember, your ad in *Computerworld* will reach more than half a million computer-involved readers (including 114,408 paid subscribers ABC 6/30/81). Call your *Computerworld* salesman for all the details. Or, to reserve space for your ad, call Frank Collins at (617) 879-0700.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

BOSTON/Chris Lee, Ed Mareckl, Joe Fitzhugh, Kathy Doyle, Diane Sukey, *(617) 879-0700*
CHICAGO/Dave Dolber, Newt Barrett, Jan Raska, Chris Lee, *(312) 827-4433*
NEW YORK/Mike Masters, Peter Senft, Doug Cheney, Ray Corbin, Marge Corcoran *(201) 967-1350*
SAN FRANCISCO/Bill Healey, Barry Milsone, Ruth Gordon, Linda Tucker, Eileen Dunn *(415) 421-7330*
LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, Delbra Pendergrass *(714) 556-6480*

Deltak Offers Course Series On CW, CAI

OAK BROOK, Ill. — Courses for the nontechnical computer enthusiast and for the experienced computer-assisted instruction (CAI) developer have been introduced by Deltak, Inc. here.

Series No. 7CW-A99, "*Computerworld* Series — a Computer News Video Magazine," is currently available for rent and Series No. 7XE-B99-CE, "CAI Course Development and the Course Structuring Facility," will be available this month.

The "*Computerworld* Series — A Computer News Video Magazine" is a set of 13 of the 30-minute programs originally produced by CW Communications/Inc. Topics ranging from the role of robots on automobile assembly lines to computers helping deaf children learn language are included.

While the CW series runs 6½ hours, Deltak noted that participants in the "CAI Course Development and the Course Structuring Facility" will spend 30 to 40 hours learning how to develop a computer-assisted instruction course using the course structuring facility of IBM's Interactive Instructional Authoring System (IIAS).

As a prerequisite for the self-instruction CAI course, a participant reportedly must be able to apply general instructional design principles to the development of CAI instruction. Deltak said an instructor in training can receive this experience via its Series 7XE-A99-CE, "Training Program Design." A training installation also is required to have IBM's IIAS installed.

Both series can be rented at a cost of $50 and $125/mo per course, depending on the volume of courses selected. The materials are provided for use at the customer's site. Information can be obtained from local Deltak sales offices or by contacting the company at 1220 Kensington Road, Oak Brook, Ill. 60521.

'A Word to the Wise . . . Don't Move Until I Unplug You.'

Here's to you, Quadronix!

For ten years of hard labor as the industry's ubiquitous "working tape". For relentless service in the data center. For your consistent level of quality recording. For your reasonable price. And for helping to establish the Wabash reputation for excellence.

As the pioneer of error-free computer tape, you have served the industry well. Your advanced manufacturing process and four-phase testing cycle have lead us to the superior technology we now use to produce G-Tape, the universally adaptable computer tape. Your unique coating process has allowed us to develop our outstanding line of diskette products for the office and home.

Thank you, Quadronix, from all of us at Wabash and your thousands of customers... you've done us proud!

wabash

United States Wabash Tape Corporation, 2700 Des Plaines Ave., Des Plaines, Ill. 60018. Tel. (312) 298-8585. (800) 323-9868. Telex 9106511800.
Canada Wabash Tape Canada Ltd., 3135 Universal Drive, Mississauga, Ontario, Canada L4X2E6. Tel. (416) 625-9533. Telex 06961345.
Europe Wabash Tape (U.K.) Ltd., 43 Redhills Road, South Woodham Ferrers, Chelmsford, Essex, England CM36JF. Tel. (STD 0245) 322380. Telex 995455.

Calendar

March 1-5, Atlanta — **Structured Systems Design/ Structured.** Contact: Jim Highsmith, Ken Orr and Associates, Inc., 715 E. 8th, Topeka, Kan. 66607.

March 1-5, Scottsdale, Ariz. — **1982 Conference on DP Performance Management.** Contact: Judith Caron, Applied Computer Research, P.O. Box 9280, Phoenix, Ariz. 85068.

March 1-5, Boston — **Structured Analysis/Design Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

March 1-5, London — **Structured Design Programming Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

March 1-5, San Francisco — **Design by Objectives.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

March 2-5, San Diego — **Software Documentation Under MIL-STD-1679.** Contact: Software Enterprises Corp., Software Management Training Institute, 31220 La Baya Drive-110, Westlake Village, Calif. 91362.

March 3, Anaheim, Calif. — **The California Computer Show.** Contact: Carol Reimer, Norm De Nardi Enterprises, Suite 204, 289 S. San Antonio Road, Los Altos, Calif. 94022.

March 3, Gaithersburg, Md. — **Fips Software Documentation Workshop/NBS.** Contact: Albrecht J. Neumann, A369 Technology Building, National Bureau of Standards, Washington, D.C. 20234.

March 3-5, Washington, D.C. — **Word Processing II,** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

March 3-5, Arlington, Texas — **Design of On-Line Systems.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, 180 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

March 3-5, Philadelphia — **Data Base Fundamentals.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, 180 Linden St., P.O. Box 181, Wellesley, Mass. 02181.

March 3-5, Seattle — **Network Protocols.** Contact: American Institute for Professional Education, Carnegie Building, Madison, N.J. 07940.

March 3-5, San Francisco — **DP Training Administrator's Workshop.** Contact: Ware Associates, 38 Main St., Hudson, Mass. 01749.

March 3-5, New York — **Using Computer Graphics: Techniques, Systems and Applications.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, San Francisco — **Telecommunications Management.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, San Francisco — **Integration for Word Processing and DP Systems.** Contact: Seminar Department, Datapro Research Corp.,1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, San Francisco — **Minicomputer Systems: Guidelines for Successful Selection Acquisition & Operation.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, Chicago — **Planning for Office Automation: Concepts and Practices.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, Chicago — **Structured Systems Analysis, Design and Programming.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, Chicago — **Structured Testing.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 3-5, San Francisco — **Financial Information Systems: The New Generation.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

March 3-7, Jersey City, N.J. — **Microcomputer Week '82.** Contact: Catalyst Conference, H 112, Jersey City State College, 2039 Kennedy Blvd., Jersey City, N.J. 07305.

March 4-5, Chicago — **MVS Systems Management Workshop.** Contact: Sondra Schwartz, Boole & Babbage,

Another Intelligent Systems' first:
Money-back, no-risk color graphics!
If you're using a black and white terminal, here's great news from Intelligent Systems, the first company to ship 20,000 color graphics desktop computers and display terminals. We'll sell you factory direct—our 8001-I high resolution, color graphics terminal for absolutely the lowest price in the industry: $3695, keyboard included. Plus we'll give you an unprecedented, money-back offer, to let you discover our quality, reliability and performance.
Here's our offer: Just buy a single evaluation unit before December 31, 1981, cash with your order, at the special low price of $3695. Use it for 30 days. Then, if you're not completely sold on the merits of the 8001-I, return it. Intelligent Systems will return the purchase price of the unit. It's that simple. If you decide to return the unit, your only cost would be transportation charges to and from Norcross, Georgia.
However, we're convinced you'll keep it. Intelligent Systems is the world's largest manufacturer of color graphics terminals and our 8001-I customers include such names as General Electric Credit, Nabisco, Crown Zellerbach, Abbott Laboratories, Monsanto and Standard Oil—so you'll be in good company.
Moreover, the standard features of the 8001-I generate efficiency on the job: Executive size 19" CRT (not 13"). 480H x 384V individual dot addressability, point, vector and arc generation, eight basic colors with over 4,000 shades, 80 characters per line by 48 line format, RS232C interface, 101-key keyboard. And every terminal can easily be upgraded to a full-featured desktop computer.
Good news for ISSCO and SAS/GRAPH users: The 8001-I device drivers are supported by ISSCO and SAS/GRAPH, so you can get color graphics at an extremely cost-efficient price—plus our money-back guarantee.
For the name of your nearest Intelligent Systems representative, call 800-241-9699.
Intelligent Systems took the high cost out of high-resolution color graphics.
Now, we've eliminated the risk in evaluating it.
Intelligent Systems
COLOR COMMUNICATES BETTER
Interstate Drive • 225 Technology Park/Atlanta Norcross, Georgia 30092 Telephone 404/449-5861 • TWX 810-766-1581
U.S. domestic price. Unretouched photos of screens. Money-back offer expires 12/31/81.
$3695 keyboard included
Money Back Guarantee

Calendar

Educational Services Division, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

March 4-5, San Francisco — **Information-Oriented Graphic Design in Computer Graphics.** Contact: National Computer Graphics Association, Eloise Wenker, 2033 M. St., N.W., Washington, D.C. 20036.

March 4-5, Napa, Calif. — **Computer Law: Recent Developments in Taxation and International Transactions.** Contact: Paul Bent, General Counsel, Century Financial Services, Inc., 17748 Sky Park Blvd., Irvine, Calif. 92714.

March 4-5, Williamsburg, Va. — **Software Cost Estimating.** Contact: Education Foundation of the Data Processing Management Association, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

March 4-5, New York — **Selecting Computer Terminals for Improved Productivity.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 4-5, Chicago — **IBM's Systems Newtwork Architecture.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran N.J. 08075.

March 4-5, Los Angeles — **SAS Advanced Input/Output Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

March 4-5, Frankfurt, W. Germany — **International Videotex Congress.** Contact: Diebold Deutschland GmbH, Feuerbachstrasse 8, D-6000 Frankfurt/Main, W. Germany.

March 6, San Francisco — **Vsam Coding in Cobol Workshop.** Contact: Expertise Extension Workshop, 220 N. Glenoaks Blvd. D, Burbank, Calif. 91502.

March 6, Los Angeles — **CICS/VS Application Design Workshop.** Contact: Expertise Extension Workshop, 220 N. Glenoaks Blvd. D, Burbank, Calif. 91502.

March 6, Los Angeles — **JCL and Utilities.** Contact: Expertise Extension Workshop, 220 N. Glenoaks Blvd. D, Burbank, Calif. 91502.

March 8-9, Washington, D.C. — **How to Manage Data and Information as a Resource.** Contact: Arnold Barnett, Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

March 8-9, Boulder, Colo. — **Tele/Conferencing Technologies.** Contact: Cross Communications Co., Suite B, 934 Pearl, Boulder, Colo. 80302.

March 8-10, San Francisco — **Local Networks.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 8-10, San Francisco — **Data Communications — An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 8-10, San Francisco — **Introduction to Word Processing: Concepts, Systems and Applications.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 8-10, Chicago — **Data Base Management Systems: A Comparative Analysis of General Purpose Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 8-10, Chicago — **Word Processing: Effective Operations Management.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 8-10, Los Angeles — **Selecting Business Application Software.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

March 8-10, Boston — **Automated Office Implementation Workshop.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

March 8-10, Pittsburgh, Pa. — **How to Develop a Long Range DP Plan.** Contact: BSI, 4720 Montgomery Lane, Bethesda, Md. 20614.

March 8-11, Columbus, Ohio — **Education DOS/VS (E) Performance Measurement and Tuning.** Contact: Gaol Systems International, Inc., P.O. Box 29481, Columbus, Ohio 43229.

March 8-10, Chicago — **Data Processing: Fundamental Concepts.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

THE LAST THING WE'LL SELL YOU IS A TERMINAL.

There are hundreds of CRT terminals on the market. Some good. Some not so good. And you can buy most of them, right off the shelf. So why do more large-volume users specify Zentec? It's simple really. We provide intelligent solutions to your information processing needs. It's our business. And our solutions don't begin with a terminal. They end with one.

The Total Solution—a Custom Approach
The solution begins with you, with your system and business objectives. We work with you to help analyze and set your objectives from the viewpoints of marketing, engineering, manufacturing and your customer. Then our hardware and software team applies your solution requirements against our modular systems. We implement a unique terminal workstation around a flexible minicomputer-like bus architecture and threshold LSI technologies. In short, Zentec provides a custom solution...custom keyboards, custom printed circuit boards, custom software, firmware and even packaging... whatever it takes to solve your problem. All at a very competitive price.

Lower Cost of Ownership—the Intelligent Investment
Quality is a fundamental part of every Zentec terminal system. Since the last decade, we've met and surpassed the quality requirements of the nation's leading large-volume users. Our manufacturing processes assure the highest product quality and reliability standards.

Each component, subsystem and system is 100% tested. Burned in. Then tested again. As a result, our DOA (Dead-On-Arrival) rate is less than 1%. This means you can eliminate testing our terminals prior to shipment to your customer. And our MTBF (mean time between failure) is over 10,000 hours. That translates to fewer service calls. But even if a call is necessary, our MTTR (mean time to repair) is now under 20 minutes. Work the entire equation: *competitive price + low DOA + long MTBF and short MTTR = low cost of ownership.*

Custom Solutions—Added Value
The fundamental values of a custom terminal can add up to your most intelligent alternative, specifically:

- Code executed at the terminal workstation level reduces host overhead, extending the life of the host system.
- More terminal workstations can be supported by the host with faster response time.
- Faster response time, keyboards customized to meet application requirements and other ergonomic features add up to high operator productivity.
- Value-added terminal workstations assure greater control of the aftermarket for your products.

Get Off the Shelf, and Back into Business
Custom configuration. Quality. And lower cost of ownership. They're three important reasons why more and more companies are coming to Zentec for intelligent solutions to information processing problems. Companies like R.C.A., G.T.E., Tandem Computers Incorporated, McDonnell Douglas, and United Press International. For more good reasons, send in the coupon below. Or call us at (408) 727-7662. It may be one of the most intelligent moves you've ever made.

ZENTEC.
2400 Walsh Avenue, Santa Clara, CA 95050
(408) 727-7662

Sales Offices: Long Grove, IL (312) 634-9550; Playa Del Rey, CA (213) 822-0278; Richardson, TX (214) 690-9265; Rockville, MD (301) 762-7990; Santa Clara, CA (408) 727-7662; Waltham, MA (617) 890-7915; White Plains, NY (914) 428-2801; West Palm Beach, FL (305) 684-8898.

OK Zentec, tell me more about your intelligent alternatives. Please—
☐ Send me product literature.
☐ Have a Zentec representative contact me.
☐ Call me at ( ) _____
Name: _____
Title: _____
Company: _____
Address: _____
City: _____ State: _____ Zip: _____
CW2

EDITORIAL

This Bit-Boggling World

In the old days of data processing — which weren't that long ago — it was easy to tell the difference between a microcomputer, a minicomputer and a mainframe. A microcomputer had an 8-bit address space and could fit on a desktop; a minicomputer had 16 bits and was the size of a large desk; a mainframe had 48 bits or more and was the size of a roomful of desks.

Things are a little more confusing today. Most micros now have a lion's share of the bit power and are invading the territory once dominated by the minicomputer. Minis, although smaller in size and relatively modest in price, can give many traditional mainframes a run for their program money. And a mainframe — if such a word still exists — has more than enough power for even the most gluttonous DP chore.

While the size and power of today's computers are a credit to innovation and technology, their classifications are causing headaches for many DP managers trying to plan new systems for their shops. In the past several months, more than a handful of microcomputer manufacturers have revamped their systems and introduced products that further blur the already fuzzy line that separates the once fun-and-games micro from the all-business mini. Most new entrants boast a 16-bit address space and some even hint at 32-bit capabilities.

In fact, the lowly 8-bit processor is fast becoming an industry relic, relegated to such second-rate jobs as peripheral control and terminal intelligence.

Not to be outdone by the energetic micro makers, the mini makers have taken their clue from the mainframe people and started to double up, even triple up, on their processors. The results of this technological one-upmanship are impressive performance figures aimed at overshadowing competitors — and increasingly harried users being drawn further into the dyadic, triple symmetric, redundant, multi-CPU whirlwind.

Of course, there is nothing wrong with building machines that are faster and more powerful than the existing ones. But it puts quite a burden on the bit-boggled user who tries to keep abreast of the industry's rapid-fire and sometimes confusing innovations.

Pacifier

DATA PAST

Five Years Ago
Feb. 14, 1977

NEW YORK — IBM had "arbitrarily and artfully" set the prices users paid for computer systems, according to a confidential memo from the firm's files.

The 21-page memo, a study of corporate strategies written in December 1971 by Hilary Faw, IBM corporate treasurer, was entered into evidence at the U.S. vs. IBM antitrust trial here.

— — —

WASHINGTON, D.C. — A procompetition resolution planned as a "countermeasure" to the AT&T-fostered Consumer Communications Reform Act was scheduled to be introduced in the U.S. House of Representatives.

Ten Years Ago
Feb. 9, 1972

SACRAMENTO, Calif. — The California Board of Equalization proposed taxation of software as tangible property. The board was conducting hearings here to establish firm guidelines. A final decision on the proposal had been postponed pending analysis of the testimony of local firms.

— — —

ATLANTA — Sperry Univac management told a meeting of the RCA Computer Users Association here that Univac would fill outstanding orders for RCA equipment and all new orders received by June 30. Univac also reassured users that it would take over maintenance at existing RCA sites.

LETTERS

Behind the Times

"When Is a Consultant Not a Consultant?" [CW, Jan. 11] represented a major disservice by one who holds himself out as an expert advisor. The author, consultant Walter E. Ulrich, is not up to date.

It was in the mid-'70s when the Metcalf Commission and Cohen Commission dealt and disposed with the issue discussed by Ulrich. At that time, the Association of Data Processing Service Organizations, Inc. (Adapso), an affiliate of his, and other consulting "cooperatives" attacked the accounting profession on the subject of independence regarding the audit and a certified public accounting firm's involvement as consultants to its audit clients.

Congress approved the disposition that prevents a CPA firm from assisting in the development of systems for audit clients along with several other restrictions on CPAs.

Should I now view Ulrich's article as a further effort to restrain trade? The issue and its disposition are more than seven years old and, in case Adapso hasn't informed Ulrich, all was settled in his favor.

I sincerely caution any DP managers against using Ulrich's advice if it is to keep CPA firms from consulting in their shops. That would presume that those CPA firms, which have their license to lose if they should consult on such a basis, are even more outdated than Ulrich, and that would be an absurdity.

John F. McGraw, CPA
Grand Rapids, Mich.

Important Omission

In many respects, I think the article "Criminal Minds Keep Pace with Technology; Stop, Thief!" [CW, Dec. 28] was right on the money — particularly the statement, "As information becomes a corporation's chief asset, securing that information will become vitally important." Although I basically agree with the writer's views, I would like to offer this postscript.

In retrospect, it seems explicable that a business would concentrate primarily on automating its procedures and information recording/retrieval, not on securing data. Information processing is, after all, a "bread and butter" issue.

However, after information processing runs reasonably smoothly, priorities might well shift. Multimillion-dollar rip-offs perpetrated via computer have forcibly made the data processing community aware of the need for security.

In citing measures already implemented by some organizations, the article mentioned computer systems monitoring and auditing, audit software controls, contingency plans, disaster recovery sites and personnel screening. Naturally, this wasn't intended to be an all-inclusive list, yet there was a significant omission. These measures do nothing to prevent unauthorized system access or disclosure and falsification of data.

To minimize exposure to these risks, both data encryption (which was discussed) and an access control facility (an option that wasn't mentioned) are needed. Access control requires positive user identification and serves to restrict access to the computer system and its resources. Data encryption not only protects information being communicated over transmission lines, but also information stored on both disk and portable media, the latter being particularly vulnerable.

Eberhard Klemens
President
Circle Software Corp.
Oak Brook, Ill.

GETTING AHEAD IN DP / Donald J. Berardo‡

Your Career Timetable

What would you like to be doing five years from now? If you haven't thought about that, you haven't thought enough about how to get ahead in DP.

Many of us know what we'd like next week or next year, but unless those things are tied to long-range plans, we aren't managing our "career time" as well as we should be.

First, ask yourself a few simple questions, whose answers may not be so simple:

1) Do I want to stay in DP?

2) Am I happy with what I'm doing right now?

3) Am I likely to be happy doing the same thing five years from now?

Five-Year Plan

The next step is to make two plans — a five-year plan and a one-year plan. Let's consider the five-year plan first and work back. If you think it's impossible to look five years into your career future, think again. There are some developments you can't control, of course — but there are some that you can actively shape.

For instance, analyze DP trends, both within and outside of your company. To do this, draw upon your professional reading, your network and your intuition. Does your company seem to be moving toward distributed processing? Toward telecommunications? Time-sharing? How soon will these trends become major factors in your company and in DP? Which of these trends interests you most?

Next, you must decide where you want to be in your company and in DP five years from now and start making the necessary plans to get there.

Are there courses or seminars you should be taking to increase your expertise in one of the areas of future importance? Is the career path toward the top of your division open, closed or rocky? Should you be looking into other areas of the company? Should you begin subscribing to journals that specialize in your future area of expertise? Do you know anyone who can advise you about this area? What salary do you expect to be making in five years?

To accomplish the objectives of your five-year plan, you must develop specific one-year plans. Start a career journal or log, in which you record weekly and monthly strategies and objectives, and your success or failure in completing them.

	What	With Whom	Results & Notes
January	Finish current program module before target date.	Clarify biweekly with program manager, John.	Too soon to ask for bonus.
April			
July			
November			

One-Year Plan Chart

Set Up Career Chart

For instance, you might decide to try for an important project, to go to lunch with the head of a user area, to work toward a 15% raise and promotion at your next review and to complete your current project a month ahead of schedule.

To help yourself make specific goals and evaluate your progress, set up a one-year plan chart (see box). Do the same for your five-year plan, using years instead of months. (Use more detail than shown here.)

Constantly test your success rate and add new monthly or weekly goals to your one-year plan. Your five-year plan will almost certainly change over the course of time, but it will be changing *within the context of your own carefully considered decisions.*

In short, *you* will be in control of your "career time," both present and future. When the winds of change blow, your plans will give you a rudder to control your direction and sails to take advantage of them.

Berardo is a management counselor and career therapist. He is a vice-president with the Meld Group in Newington, Conn., publishers of a monthly newsletter on management development.

READER COMMENTARY / Jack Bologna‡

Computer Matching vs. Privacy

Computerworld's article on the federal government's computer matching program to ferret out fraudulent benefit claimants ["Matching Credited With Saving Millions" CW, Dec. 14] was brilliantly done.

The computer matching vs. privacy issue is indeed a "sticky" one from a constitutional and Privacy Act point of view. With the President's "showcasing" of that effort on TV recently, I'm really sorry the general public won't be able to read the article. The writer sheds much needed light on all the intricacies of the issue.

But I'm afraid the President's comments about saving $2 billion will be all the mass public will hear. In essence, the President's support for the matching program is a "green light" for all inspector generals in the federal government. What wise bureaucrat would ever defy his President's dictates, particularly when the President is also inclined to wiping out federal jobs?

With the green light from the boss, I would suspect that all agencies dispensing largess to the poor, the aged, the sick and the troubled will "pour on the coals." They'll all be after the petty chiselers.

But the issue of government waste, fraud and inefficiency won't be solved by the President's green light on welfare and other aid recipients. The waste that really hurts the government most (and costs us taxpayers the most) is not the small-time petty thief who claims four dependents when he should only claim three, or claims he is unemployed when in fact he is working (as a bus boy or maid).

'Let's place the emphasis on government waste where it could return the highest dollar savings: on procurements, not payments. If it's a crime for the poor man to steal $100 from the government, at what point does it become a crime for a corporate giant to steal?

Is a $1 million overrun on one contract okay? How about $10 million or $1 billion?

Ferreting out the billion-dollar frauds on government contracts is cheaper than computer matching to catch the penny ante crooks . . . But so far in this administration, I have seen no green light on that.'

The major financial problem in the federal system is *procurement,* not payments. That $2 billion the President claims was saved by computer matching (and exposing thousands of innocent people to invasions of privacy in order to catch a few hundred), could be saved in one fell swoop on one military contract cost overrun, like the C5A. (When the whistle was blown on that one by a lowly Defense Department auditor, they fired him, and when forced to rehire him, he was harrassed so badly he finally quit.)

Let's place the emphasis on government waste where it could return the highest dollar savings: on procurements, not payments. If it's a crime for a poor man to steal $100 from the government, at what point does it become a crime for a corporate giant to steal? Is a $1 million overrun on one contract okay? How about $10 million or $1 billion?

Frankly, ferreting out the billion-dollar frauds on government contracts is cheaper than computer matching to catch the penny ante crooks. Ask any decent auditor if that's not so. But so far in this administration, I have seen no "green light" on that. In fact we seem to be just about ready to hand over the keys to Fort Knox to those folks.

In my days of federal audit and investigative experience, it was just about the same. We went after the small fry. They had neither political nor economic nor social clout. We made the victims of injustice the culprits, because they couldn't defend themselves and ergo, they made easier targets.

When are we going to stop this lunacy of saving pennies and letting the dollars go? As Gertrude Stein said, "A rose is a rose." And to me, "a thief is a thief." So we should at least accord equal treatment to the big thief as we do the little thief. (Mr. President, let me hear you on that one, too. You've been strangely silent on it.)

Most Expedient?

And finally, there is one other anomaly in the computer matching program. Is it the only available technique, or is it simply the most expedient in ferreting out phony claims and phony claimants?

I would conclude expediency is its justification. There are other options, such as using paid informers, a la the income tax law (rewards for information).

But that seems worse to many people than computer matching, which admittedly is somewhat cold, deliberate and more calculating and yet, perhaps more humane. At least it doesn't turn neighbor on neighbor or wife upon husband as the tax code seemed to do when I was an agent.

If not informers or matching, then what else? How about audit or statistical sampling techniques or the use of fraudulent claimant profiles? They might work and do less damage to our feelings against privacy invasion.

Yet I've heard no one propose them as more tolerable solutions. I'm sure we could come up with a better answer, a more rational one, if we set our minds to it. Let's try. We have nothing to lose but our "shackles." Our privacy, at least, will be kept intact.

Bologna is president of Odiorne International, Inc., management and instructional technologists based in Plymouth, Mich.

LETTERS

'Timely' Articles

"Job Burnout: It's Becoming an Epidemic in DP Centers" and "Jobs Taking Mental, Physical Toll on DPers" [CW, Jan. 11] may be more timely than you realize.

The first article noted that "burnout results from a serious clash between the ... employee's ... personality and the environment in which such an individual is ... forced to work." In many cases that environment is defined by management principles, attitudes and suppositions that employees are not aware of and which employees might indeed question if they were aware of them.

Thus a conflict could just as well arise with employees who do trust others, but whose self-insight exceeds their political insight into the motivations of those they trust. (In marriage, for example, a well-adjusted, trusting person can be severely hurt by a partner who abuses that trust.)

Three circumstances make it foreseeable that non-DP specialists will also encounter such conflicts with the environment created by management, with no apparent way to resolve them. First, specialized occupations are increasing in number. Second, the entry-level work force will be decreasing. Third, various managements do see employees as economic resources or burdens, rather than as human resources.

An individual's maladjustment may indeed be a psychological problem. But maladjustment between the worker and the work place is a sociological problem. When a current book carries the subtitle "Avoiding the Human Toll of Corporate Life," I think it is clear that DPers' "burnout" problems need to be solved in a way that will humanize the workplace for the benefit of all.

David Ames
Watertown, Mass.

Statistics Not Justified

We believe one of the conclusions in the 1981 Datapro Research Corp. ratings [CW, Dec. 21] cannot be justified statistically. Specifically, we are referring to the 19 packages rated highest on all nine evaluation characteristics. To qualify, at least three users had to give a package a cluster one rating (or highest rating) on all nine evaluation characteristics.

The award, therefore, had nothing to do with the average rating by all users evaluating those packages. Obviously, the more users rating a package biased the result. For example, IBM's Mapics — with 90 respondents — was one of the 19 selected, even though its overall rating was only 3.0. Moreover, every Mapics rating fell in cluster two, with cluster one being the highest.

I'm reminded of my statistics teacher who told me that given an infinite number of monkeys and an infinite number of typewriters, one of the monkeys will type the Gettysburg Address.

I have a lot more faith in Datapro's statistical consultants. But their faces should be turning red from embarrassment. They have eliminated the law of averages and, I'm sad to say, replaced it with statistical nonsense.

Martin A. Goetz
Director
Software Products Division
Applied Data Research, Inc.
Princeton, N.J.

USSR and IBM 370

Being among the top 10 procrastinators at large today, I did not respond to an error as timely as possible when it occurred.

However, in the article "Awacs Not Exactly State-of-the-Art: Experts" [CW, Oct. 26], the statement was made that no 370-series computers were sold to the Soviet Union or other Eastern bloc countries.

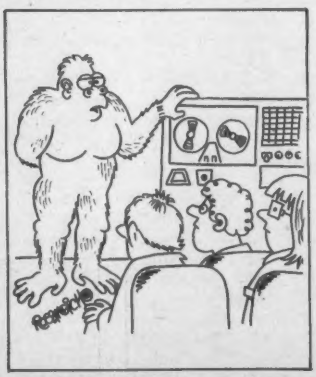
Until the letter to the editor from G. Gramm was printed [CW, Jan. 11], it had slipped my mind.

If you can obtain a copy of the March 1976 issue of *Modern Casting* you will see a brief piece mentioning that IBM was at that time installing an IBM 370/158 at the Kama River Truck Plant as part of a 10-megabuck package.

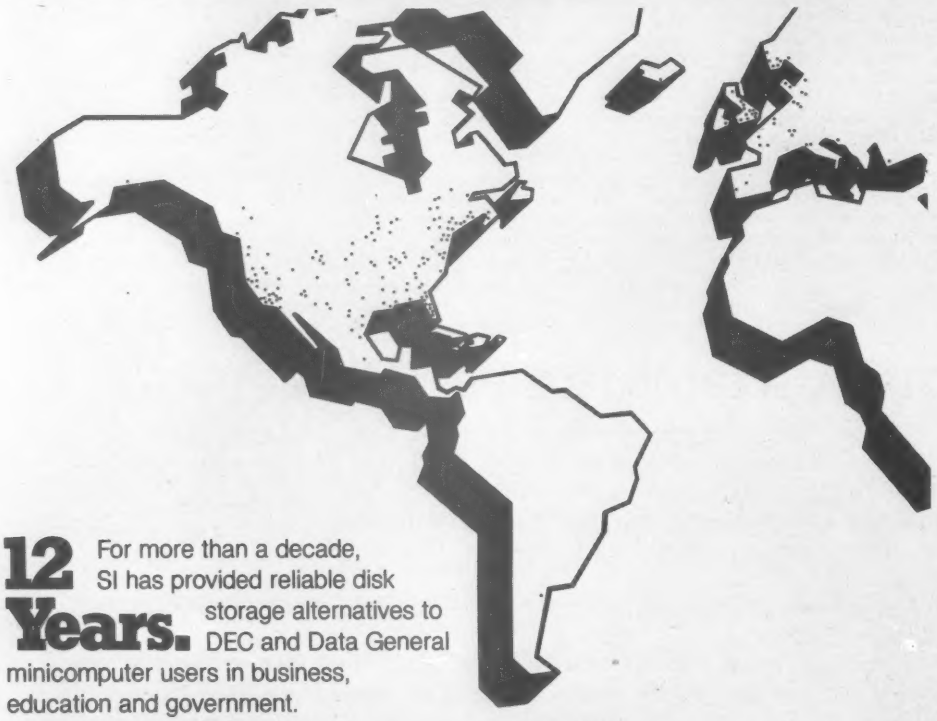
Since then I have seen nothing that would indicate the system was not installed and can only assume that the USSR has had a working 370 since that time.

This issue details much of the technology that was sold to the USSR at that time, particularly since the conversion of truck and tractor plants to armor manufacturing is relatively simple as the Soviets demonstrated in the early 1940s.

R.J. Kelley
Liberty Glass Co.
Sapulpa, Okla.



'Good Afternoon, Class. I'm Here to Demonstrate How Easy This Model Is to Operate.'



12 Years. For more than a decade, SI has provided reliable disk storage alternatives to DEC and Data General minicomputer users in business, education and government.

20,000 Installations. SI has given thousands of DEC and DG users just what they wanted. Reliability. Flexibility. Broad choice. Fast delivery. And savings in both money and floor space.

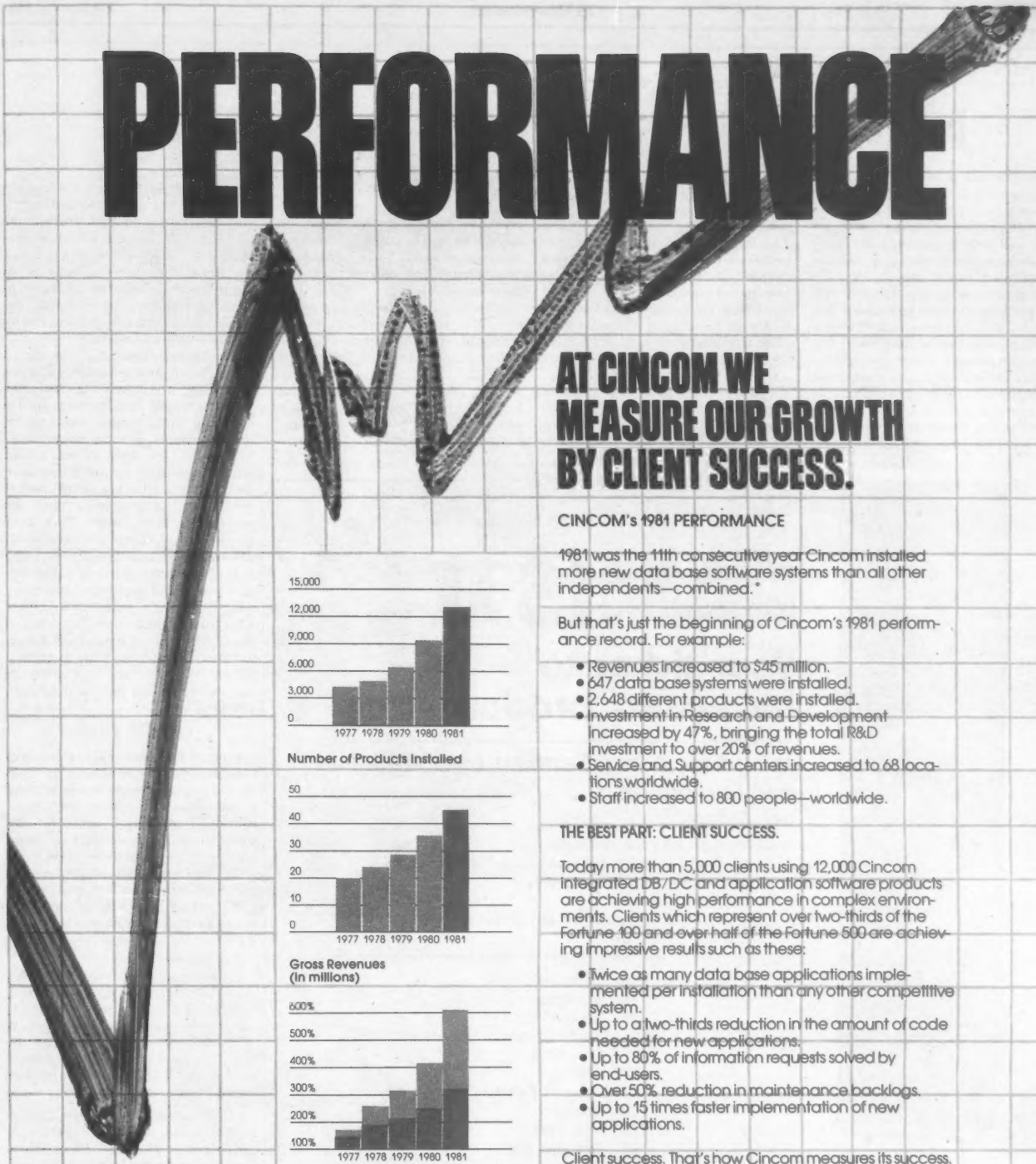
A Worldwide Service Network. SI maintains fully staffed and equipped service centers throughout the U.S. and Europe to ensure prompt response and complete repair capability.

The reliable alternative for over a decade.

System Industries

United States: 1855 Barber Lane, Milpitas, CA 95035, (408) 942-1212, Telex 346459.
Europe: System Industries (Europe), System House, Guildford Road, Woking, Surrey, GU22 7QQ, England, (44) 4862 5077, Telex 859124.
California (714) 851-6289, (213) 822-3161; Colorado (303) 986-1591; Georgia (404) 955-2252; Illinois (312) 948-9330; Massachusetts (617) 695-4022; Michigan (313) 663-4925; New Jersey (201) 839-8650; New York (516) 482-6082; New York Metro (212) 785-9300; Ohio (513) 771-0075; Texas (713) 497-7224, (214) 386-8776; Virginia (703) 734-9700; Washington (206) 451-8791; West Germany (49) 6102 5464; Sweden (46) 08-63 16 20

PERFORMANCE



AT CINCOM WE MEASURE OUR GROWTH BY CLIENT SUCCESS.

Number of Products Installed

Gross Revenues (In millions)

Comparison of R & D expenditures to gross revenue.*

■ PERCENTAGE OF R&D INVESTMENT GROWTH
■ PERCENTAGE OF REVENUE GROWTH

*1976 Base 100% for R & D and Revenue.

CINCOM's 1981 PERFORMANCE

1981 was the 11th consecutive year Cincom installed more new data base software systems than all other independents—combined.*

But that's just the beginning of Cincom's 1981 performance record. For example:

- Revenues increased to $45 million.
- 647 data base systems were installed.
- 2,648 different products were installed.
- Investment in Research and Development increased by 47%, bringing the total R&D investment to over 20% of revenues.
- Service and Support centers increased to 68 locations worldwide.
- Staff increased to 800 people—worldwide.

THE BEST PART: CLIENT SUCCESS.

Today more than 5,000 clients using 12,000 Cincom integrated DB/DC and application software products are achieving high performance in complex environments. Clients which represent over two-thirds of the Fortune 100 and over half of the Fortune 500 are achieving impressive results such as these:

- Twice as many data base applications implemented per installation than any other competitive system.
- Up to a two-thirds reduction in the amount of code needed for new applications.
- Up to 80% of information requests solved by end-users.
- Over 50% reduction in maintenance backlogs.
- Up to 15 times faster implementation of new applications.

Client success. That's how Cincom measures its success. To experience new levels of performance through Cincom's integrated DB/DC and application software solutions, contact our Marketing Services Department.

800-543-3010
In Ohio: 513-661-6000
In Canada: 416-279-4220

*Based upon best estimates of industry surveys and independent studies.

Cincom Systems

2300 Montana Ave. ■ Cincinnati, OH 45211

READER COMMENTARY/Cliff Heyer‡

Job Burnout: Is Management to Blame?

"Job Burnout: It's Becoming an Epidemic in DP Centers" [CW, Jan. 11] presents a realistic synopsis of an important problem. Solving the problem will require change for both DPers and management, as well as educational institutions.

Experience at a top Fortune 500 company as a fourth-generation language ("4GL" data management systems and data base management systems languages) systems engineer and information resource consultant brought the job burnout syndrome to my attention.

During the course of my two-year employment, I worked for one executive the first year and another the second year. Both executives were not management information systems (MIS) personnel. Due to the "red tape" of the corporate MIS department, they hired outside systems people to do the work. The differing managerial policies of each resulted in vastly different levels of job satisfaction and quality of productivity.

The first executive set forth an unstructured, flexible schedule for my position. For example, I would be allowed to work 12 hours one day and four hours the next. Forty hours could be completed in four days, giving a three-day weekend. Research projects could be completed in the country, far from city traffic jams. Weekly progress reports were submitted denoting the problems encountered and changes in estimated completion dates. I was treated as a professional and trusted; no questions were asked.

In sharp contrast to the first executive, the second imposed a rigid schedule. My hours were to be nine to five Monday through Friday with no exceptions for any reason. My weekly progress reports were followed by interrogations as to "why project 'A' could not be done today." Pressure was applied to "finish tomorrow or else."

My job satisfaction and work quality were higher under the first executive; his policy helped prevent job burnout. The flexible schedule prevented me from ever having to break my train of thought because of an eight-hour rule. With no pressure applied, I was free to integrate my thoughts without being distracted by a "finish-or-else" mentality.

The problems resulting from forced interruption and pressure are twofold. First, it is inevitable that some key points will be forgotten; not integrating these points causes errors in the systems. Second, your "boss" blames you for these errors, which otherwise would not have occurred. As time passed, I began to dislike this executive. His pressure caused the projects to take longer than they would have if he had not interfered.

There were clear reasons why the second executive acted in a distrustful manner. He was one of the many who have been exposed to DPers who "promise the world" and return Pluto. All fields of work have exceptional and not-so-exceptional groups. DP has its share of the "not-so-exceptionals" as it is a new and unstandardized field.

Company Politics

Another less legitimate reason was company politics. Although the field of behavorial science has pioneered many advances in management techniques, there is still room for improvement. Processes such as management by objectives (MBO) — while in theory are strong — can cause job burnout if not managed in a bona fide manner. In addition, modifications must be made to tailor the process for idiosyncrasies of particular applications.

Many executives view themselves as competing for the next promotion. Every tool they can use to compete more effectively must be used. A good DPer is an invaluable tool; the executive can increase his productivity tenfold in his objectives and then hire a DPer to do it.

A few months before the performance review, however, the executive becomes nervous and pressures his DPer to hurry. After all, his promotion may be at stake if he can't meet his objective. He pounds his fist on the table demanding that the DPer finish; he needs to see the DPer from nine to five.

This occurs more often than probably most executives believe. The political structure in today's corporations facilitate and, in some cases, even encourage the detriment of DPers for improving performance reviews. DPers should be immune from these politics; objectives relating to improvements via DP should not be allowed.

The MBO process (as well as distrustful executives) demands quantifiable objectives as a measure of performance. And as most people know, an MIS development project rarely finishes on time. When MIS objectives cannot be met, management's

(Continued on Page 90)

RAMIS® II

Your ticket to increased productivity

Join us for a free Seminar on RAMIS II and find out why...

Find out how to:

- Develop an Information Center
- Develop and maintain efficient production systems
- Increase programmer productivity
- Prototype applications
- Support decision makers without disrupting production
- Ensure portability

February	9	Secaucus, NJ
	10	Somerset, NJ
	10	Louisville, KY
	11	Santa Barbara
	16	New York
	17	Chicago
	18	Newport Beach
	18	Boston
	23	New York
	25	Concord, CA
March	2	Houston
	2	Chicago

RAMIS II combines the latest in software technology: a non-procedural language for reporting and data maintenance, a flexible and efficient DBMS, a comprehensive application manager, and a data dictionary. Together with options such as high resolution color graphics, online editing, and financial modeling, these capabilities make RAMIS II the ideal foundation for establishing an Information Center.

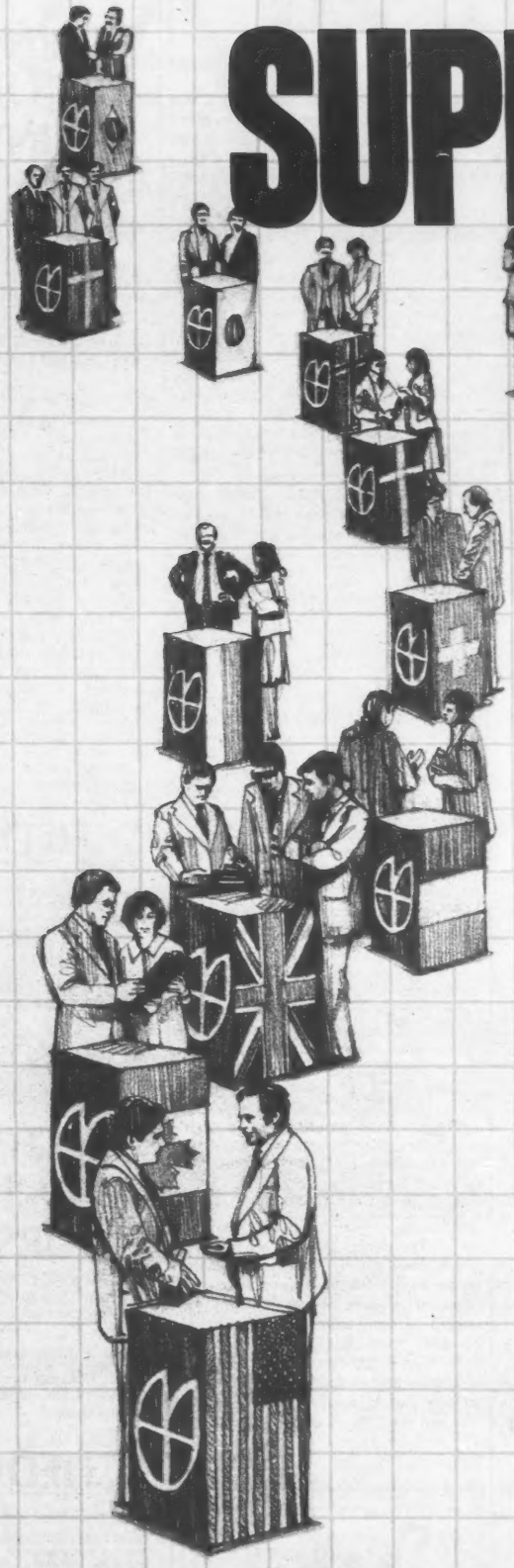
RAMIS II operates on IBM 360, 370, 43xx, 30xx series and plug-compatible computers and with all major operating systems, and RAMIS II applications are completely portable across all IBM operating environments.

For more information and to register call 800-257-9576

Mathematica Products Group/ Box 2392/Princeton, NJ 08540

CW-5

SUPPORT



CINCOM'S WORLDWIDE SERVICE NETWORK... YOUR ASSURANCE OF RELIABILITY.

RELIABILITY: It begins with the industry's most advanced, fully integrated DB/DC and application software system. High performance, quality systems years ahead of the competition. Developed and refined by the largest research and development organization in the software industry. With 10 R&D laboratories worldwide.

RELIABILITY: It's Cincom software in use. More than 12,000 products in over 5,000 installations worldwide, delivering high performance in complex environments for the world's most sophisticated companies—including over two-thirds of the Fortune 100, and over half the Fortune 500. And with unparalleled reliability so advanced that the systems are justly called "always up."

RELIABILITY: It's the independent software industry's most extensive service organization. Worldwide, more than 800 people staff 42 Cincom offices and support 26 independent agents. Our service network totals 68 locations in 47 countries.

RELIABILITY: Today, no other company has more experience, or has assisted in more successful DB/DC application implementations than Cincom Systems. Our reliable, high performance software, backed by the industry's largest and most experienced support network, responds to your needs. Now—and as your information system needs evolve.

Cincom support is one reason why, every year, for the last 11 consecutive years, more users chose Cincom DB/DC products than all of the rest of the independents—combined.

For more information on Cincom's integrated approach to information system performance, call or write our Marketing Services Department.

800-543-3010
In Ohio: 513-661-6000
In Canada: 416-279-4220

Cincom Systems

2300 Montana Ave. Cincinnati, OH 45211

LETTERS

Departmental Cooperation

The article "Consultant: Hatred Toward DPers Worsening," [CW, Dec. 14] reports on thoughts of George Henderson regarding the increasing frequency of internal discord between DP departments and corporate users. While the article accurately reflects the increasing frequency of such problems, there are other possible reasons for such an occurrence and methodologies for curing the problems.

The lack of cooperation between end-user management and the DP staff is often the result of a lack of coordination among the involved individuals from the initiation of a DP project.

Unfortunately, most DP departments are forced (or encouraged) to work in an isolated environment. Although many organizations recognize the need for an effective DP steering committee, few organizations utilize such a group to manage the DP effort. In fact, even in those situations where a DP steering committee exists, it typically has little or no effective authority over the decision making and prioritization necessary among the ever-growing list of DP projects pending.

Very often, problems surfacing around the DP effort are merely symptomatic of communications and management problems evident throughout the organization. However, due to the uniformity of dissatisfaction that tends to exist in growing DP support situations, all users can often find a common enemy in the DP department. Very quickly, one can witness the walls going up around DP and the empire growing in an attempt to defend the turf.

The article, then, correctly identifies the existence of the problem. However, the solutions identified fall short of including the most effective and necessary solutions: to develop an atmosphere of cooperation within the organization that lessens or obviates the need for DP users to identify a "common enemy."

Admittedly, this is not an easy task. However, the urgency and the necessity of the effort dictate that the changes begin immediately.

Steven D. Sass
Vice-President,
Management Systems
Advanced Resource
Development Corp.
Columbia, Md.

Managing Programmers

Poor management utilization of existing programmers contributes to the current shortage of this group. A large number of programmers work part-time; few are able to obtain part-time jobs in their area of expertise. Management could increase programming output considerably by channeling programmer energy into work for which they have been trained.

Two obvious ways to utilize programmers are to pay your existing programming staff for overtime work or hire part-time programmers who work for companies that do not have the insight your company has.

Naturally this obvious approach would require adjustments by management. They would have to trust their personnel not to 'create' work, pay people in accordance with the extra effort they put forth, stop discouraging part-time jobs, compensate managers or others who would be responsible for after-regular hours work activity (this might even create additional management jobs).

The extra cost of part-time work would be more than made up by increased productivity, the need to hire fewer full-time programmers, possibly an in-house programmer supply familiar with your systems and just possibly decreased turnover.

John Moler
Paterson, N.J.

'Pin Strips Are in Vogue This Year'

DP SATURN

Turn your PDP-11 into a powerful word processing tool.

With the WP Saturn you can add powerful word processing to your PDP-11, LSI-11, or Vax System, without the cost of a stand-alone system.

WP runs on RT-11/TSX, RSX, RSTS, IAS, VMS.

WP's ASCII Format interfaces to standard DEC files.

Assembler Language provides maximum speed and efficiency.

User Friendly Prompting helps you master word processing with minimal training.

Extensive List Processing: Forms, prompted data entry and sort/select; plus flexible merging of lists and documents.

For Information Call... **800-328-6145**

Saturn Systems, Inc., 6875 Washington Avenue South, Suite #218, Minneapolis, MN 55435, (612) 944-2452.

DP SATURN

Programmed Alternatives

Within the CICS environment, the need for a sort facility continually arises ■ Your end users want to be able to dynamically specify the sequence of output displays ■ Your application programmers want to do binary searches on out-of-sequence tables ■ Your systems programmers want VSAM records added in sequence for efficiency. The list is endless...

...**Only one problem, though.**
There is no sort facility within CICS.

The Solution is Here.
CICS/SORT provides the CICS Command Level programmer with the capability to dynamically define and execute a sort procedure within any CICS transaction.

A low overhead, efficient, in-core CICS Sort.

Write or call for more information and/or a 30 day free trial.

ftw associates, inc.
120 Wall Street ■ New York, NY 10005 ■ 212/344-4097

LEARN ABOUT BRAINWARE™ BY PANSOPHIC.

ATTEND A HALF DAY SOFTWARE SEMINAR COMPLIMENTS OF PANSOPHIC SYSTEMS.

If you'd like to increase your control and productivity, Pansophic has a complete line of utility software packages to show you—including the world's foremost source library control system, PANVALET, and state-of-the-art data retrieval and file management system, EASYTRIEVE. Also learn about PANEXEC, the ultimate executable program library system; PANAUDIT, the complete computer auditing system; and PANRISK, the risk analysis management system.

For further information contact:
Donna McCaughey
Marketing Seminar Administrator
(703) 471-9691

SCHEDULE:

March 9 Houston, TX
March 9 Little Rock, AR
March 17 Ft. Worth, TX
March 18 Dallas, TX
March 24 Milwaukee, WI

AND REGISTER FOR THE EASYTRIEVE TRAINING COURSE.

Featuring the Easytrieve basic and accelerated courses for data processors and non-data processors.

For further information contact:
Anne Marie Steiner
Training Administrator
(703) 471-9707

SCHEDULE:

Easytrieve Training Courses
EZT 101
March 2 Toronto, Canada
March 9 Indianapolis, IN
March 16 Philadelphia, PA
March 23 San Francisco, CA
EZT 201
March 3 Toronto, Canada
March 10 Indianapolis, IN
March 17 Philadelphia, PA
March 24 San Francisco, CA
EZT 202
March 4 & 5 Toronto, Canada
March 11 & 12 Indianapolis, IN
March 18 & 19 Philadelphia, PA
March 25 & 26 San Francisco, CA

PANSOPHIC

©Pansophic Systems, Inc., 1981

BRAINWARE™

The Library Control System™: the software that gives you full spectrum control of your program library.

Managing something as complex, active and accessible as your program libraries takes more than control. We give you ultimate control: The Library Control System (LCS). Created to give you absolute and adaptable program library control. Created by the Pansophic power of innovation that is Brainware.

LCS tells you everything that goes on in your program libraries—in full detail, so you can make the right decisions to manage them. It separates management and programmer functions, so you can restrict program use and changes while your programmers do their job efficiently.

LCS automatically makes library back-up and historical delete files. It keeps library audit trails for reviewing library changes and tracking down errors.

LCS gives you control over your source and executable program libraries. Incredible power to control, regulate and monitor.

The Library Control System is a combination of Panvalet, a 7-time Datapro Honor Roll winner, and Panexec, the answer to the executable environment. It's Brainware. And it's yours.

The Library Control System is IBM compatible. For more information on LCS, Easytrieve,® Panaudit™ and Panrisk,™ call (800) 323-7335.

PANSOPHIC

709 Enterprise Drive, Oak Brook, IL 60521

©Pansophic Systems, Inc., 1981

READER COMMENTARY

French Government Takes On the Development

The French government has started to create an international center for microprocessor development that will attempt to bring forth a truly portable microprocessor system, one which will be value- and culture-free, and can be applied universally.

That means that it should be just as capable of being used by an American farmer as an African peasant or by an American industrial worker as well as a European one.

It is an extremely ambitious project. Its roots do not lie in the commercial world, but in the notion that the world is going through a fundamental crisis, that computing is introducing a revolution that could be as fundamental as was the first industrial revolution, that the next stage of world civilization will be computer-based and that this needs to be actively brought about.

As one would expect, the details are as yet very hazy. The center, to be called "A World Centre for the Development of Human Resources," is largely the brainchild of the French politician and author, Jean Jacques Servan Schreiber, author of the best-sellers *The American Challenge* and *The World Challenge*.

Servan Schreiber started work on the initial steps to set up such a center shortly after the French elections in the spring of 1981 at the request of the new French president, Francois Mitterand.

The bald statement that such a center would be created was announced by the French president in late September. This was followed by the recent release by Servan Schreiber, with permission, of his report to the president. The report includes letters of support indicating a wish to be associated with the center from many of computing's best-known and most inventive researchers.

America's Best and Brightest

It is to be an international center and an international effort, though the preponderance of computer names associated with it are American. Among them are some of America's brightest and most prolific computing professionals and scientists.

From MIT comes Seymour Papert, inventor of Logo and a professor in the Department of Artificial Intelligence (AI), and Prof. Nicholas Negroponte, best known for his work on graphics and visualization. From Stanford University comes Associate Prof. Terry Wingrad, inventor of the AI language KRL and probably best and most widely known for his book *Understanding Natural Language*.

Also from Stanford is Wingrad's associate, the former minister of economics of Chile (under President Allende), Fernando Flores. It should be remembered that he was the minister responsible for the development of the National Economic Information Network and Project Cybersin. All this work was many years ahead of its time and was in turn based on the work of probably the world's leading management cybernetician, Prof. Stafford Beer.

From the Palo Alto Research Center founded by Xerox Corp. comes Alan Kay, best known for his work on the language Smalltalk. And from Carnegie-Mellon University in Pittsburgh there is Radj Redy, the founder of the university's Robotics Institute.

Outside the U.S., Servan Schreiber has also brought in Kristen Nygaard of the Norwegian Computing Institute, best known as the coinventor of the Simula language; and from Sweden comes Barbro Erlander of the University of Stockholm, a specialist in systems development with partic-

Get Graphics On Your DEC* LA120

NEW

DECPLOT™ upgrades your DEC LA120 to print graphics fast — only 35 seconds per average page — with 165 dot per inch resolution . . . Only $595. Fully compatible with most graphics software. Simple 5 minute installation expands LA120 performance, yet preserves all original functions.

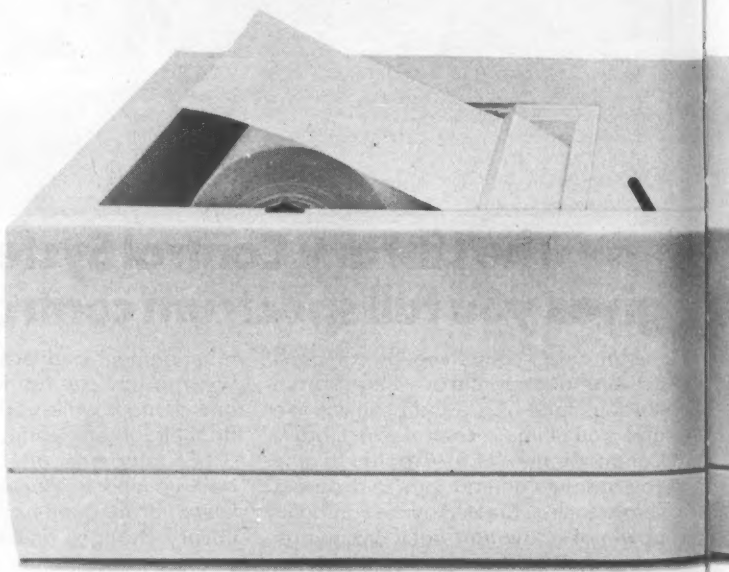
Available now from Texprint or DEC distributors.

*Registered trademark of Digital Equipment Corporation

TEXPRINT

TEXPRINT, INC.
8 Blanchard Rd
Burlington, MA 01803
(617) 273-3384

Our new LEX-21 fits into your



Actual size shown.

Which means you can carry the resources of your company's computer and data banks with you. No matter where you go.

Our LEX-21 is a cinch to carry. It weighs only 5 pounds. And all you need to put yourself in business is a telephone and a 110 electrical outlet.

The LEX-21 is the ideal terminal for executives, sales and service people and electronic mail.

Our LEX-21 can also easily plug into the Dow Jones News/Retrieval Service, the Lockheed DIALOG Information Retrieval Service, CompuServe and the Western Union Electronic Mail Service.

And although our LEX-21 computer is light and compact, don't think it isn't filled with big ideas.

It has a full-function 59-key keyboard. Thermal 40-column printer. An integral direct connect 300 Baud Modem. 2K non-volatile text buffer. Plus optional acoustic cups.

But the greatest thing about our LEX-21 is its small price. Only $1,195.

Look into our LEX-21 today. You'll find it can put you in business no matter where your business takes you.

Rex Malik‡

# of Portable Universal Microprocessor System

ular regard to human factors.

The last two of the international names so far announced come from very diverse cultures. Zhisong Tang, from the People's Republic of China, is professor of information science at the Peking Institute. Edward Ayensu, from Ghana in West Africa, is the secretary general of the International Association of Biologists, a man who has spent considerable time studying the possible impacts that microelectronics could have on the development of Third World countries.

Exactly how this high-powered group is to be associated with each other, the center and its program has not yet been revealed. It is thought likely that they, and some other well-known names to come, will set the project guidelines and steer the research. Indications from Paris are that they will each spend some time there, probably in concert, to work out the fundamental approaches to be taken in the initial development of the system.

What is quite certain is that the project will not lack for funds, resources and staff. The preliminary budget estimates indicate that they begin with a budget of around $20 million a year and a full-time research staff of 60, plus supporting staff. And sitting in the background, also associated with the project, are immense financial resources and considerable power. Though the center may in part be an initiative of the French government, some of the richest and most powerful people in the world are allied to it.

To understand what is going on, one has to backtrack to Servan Schreiber's book *The World Challenge*. The book was written in part as the result of discussions among an informal group calling itself "The Group of Paris," which Servan Schreiber founded. The group contains Africans, Americans, Arabs, Europeans and Japanese. In the report to the French president, the group is given credit for much of the thinking that led to the center's creation.

The report lists some of the recent additions to the group's membership. They include Leopold Senghor, president of the African state of Senegal, and two of the world's key oil figures, Sheikh Ali Khalifa Al Sabah, who at 32 became Kuwait's oil minister, and Sheikh Zaki Yamani, the Saudi Arabian oil minister. Both were educated in America.

The relationship of the Group of Paris to the center as a continuing institution is not made clear, perhaps on purpose. What is hinted at, however, is that their support will be continuing. It is unlikely, therefore, that the center will lack for resources, either of money or brain power.

Multidisciplinary Team

The research team itself will be multidisciplinary, containing not only specialists in directly computing-related disciplines — including graphics, telecommunications and artificial intelligence — but also specialists in anthropology, linguistics, education, the biological sciences and psychology.

But why should anyone want to try to create what can only be called a universal machine? Running through the report is a common thread: Within microprocessing lies a technology of worldwide applicability, one which could enrich human experience.

A microprocessor of the sort envisaged would have to be capable of being used within the existing social framework of the Third World. It would be a tool that would be used in the countryside, making it inessential for the poor countries to have to go through the socially disruptive processes the West has undergone in order to progress.

So why set up the center in France? Because its moving spirit, Servan Schreiber, is a Frenchman. And the present French government is committed to twin notions: One, that computing brings something new to the societal scene that will have profound effects on society and two, some future hope must be given to the Third World, a hope that goes beyond immediate economic aid.

Malik is a free-lance computer journalist based in London.

Computer Terminal briefcase.

Actual weight 5 lbs.

I want to know more about the LEX-21. Please contact me with details.

Name _____

Title _____

Company _____

Street _____

City/State/Zip _____

C 2/8/82

For information, mail this coupon to Lexicon Corporation of Miami, 1541 N.W. 65th Avenue, Ft. Lauderdale, FL 33313.

Or call us today toll-free at **800-327-8913.**

In Florida, call (305) 792-4400.

LEXICON Corporation of Miami

SYSTEMS DOCUMENTATION, INC.
"Shirtsleeves Productivity"

Writing and preparation of:

USER MANUALS, SYSTEMS/PROGRAMMING MANUALS, OPERATIONS GUIDES/RUN BOOKS, AND OTHER RELATED TRAINING MATERIALS AND DOCUMENTATION

SDI 206 Main St., Ft. Lee, NJ 07024
(201)592-8746 (212)724-5055

Job Burnout: Is It a Management Problem?

(Continued from Page 84)

inion is usually "those DPers can estimate accurately, but they feel they are too invaluable and important to be bothered with it."

While this opinion may be valid in some existing situations, generally speaking it is not. Systems work cannot be quantified to the degree that managerial work can.

MIS is a unique field. It is the existence of intense engineering set very close to a corporation's central management. Electrical and chemical engineers, for example, don't work with a division controller very often. But an MIS engineer does. It's no small wonder that MIS people often mix well because engineers are not managers. To be successful, an MIS person must work well with management.

Corporate management appears to be unaware of the fact that responsible electrical engineers have enjoyed 100% flextime for years. Corporate engineering management has learned that a flexible schedule enhances work output if used properly. When an electrical engineer works 12 hours, corporate management never knows about it and has no need to know. But when a DPer working for top management wants to work 12 hours, he is often scoffed at.

Management is a discipline that is most effective when implemented on a nine-to-five basis and for good reason. For business to operate somebody has to be at the same place at the same time each day to conduct the necessary transactions. For those who accept the field of management there is little choice.

Engineering, on the other hand, is more effective when implemented on a flextime basis. Engineering involves intense creative thought and creative thought comes spontaneously. A rigid nine-to-five schedule does not enhance creative thought because you cannot "force" creative thought. In addition, the engineer is not involved in the day-to-day operation of the business and does not need such a strict time commitment to fulfill responsibilities. DPers should not be pinned to a rigid schedule just because management is.

Management must accept and realize that its objectives can be more readily standardized than MIS objectives. Corporate engineering, without which a company could not exist, is not looked down upon for not getting a TV set out on time. Why should MIS get shafted?

Many managers will seemingly never believe that MIS people cannot accurately estimate completion dates. Nevertheless, I will attempt an explanation. MIS systems, and especially decision-support systems, involve recursive thought processes, while managerial tasks involve mostly interactive thought processes. The nonroutine nature of recursive thinking is usually impossible to standardize by time. There are no 'T-accounts' or spread sheets to quantify recursive thinking.

Recursive Thinking

Just what is recursive thinking? An analogy would be the simplest explanation. Take, for example, painting the inside of a small red house. When you paint each room, you are recursing into that room. If each room is small, the recursion is small. You continue to paint one room after another in a repeating, or iterative, process. The paint process is generally iterative because the recursions are small.

Now, let's say that one of the rooms of the red house is actually connected to the Empire State Building. When you recurse into the room to paint it, you must do a fantastic recursion to paint the Empire State Building before you can move on to the next room. While painting the Empire State Building, you lose sight of the red house. In other words, you become engulfed in the recursive process and lose sight of the iterative process of painting the red house. With recursive thinking, you lose sight of the overall picture.

So why can't we accurately estimate MIS project times? We don't know how big recursions will be until we are done with them. In other words, is the building the Empire State or the World Trade Center? More importantly, we don't know if there will be recursions (such as, is the next room connected to the Empire State Building?) All we can do is make rough estimates.

In conclusion, several changes must be made to eliminate job burnout. Management must stop pressuring DP personnel to give accurate time estimates because it often cannot be done. Management must not instill fear in DPers to "finish or else." Management must not use DPers as tools for producing outstanding performance reviews.

DPers must realize the saying "when in Rome, do as the Romans do." MIS is close to corporate management. For DPers to be respected as equals they have to conform whether they like it or not. Antisocial behavior will not be accepted in the corporate environment. Programmers must knock off the chip on their shoulders that says they are "too important to have to conform."

Heyer is an information resource consultant and software engineer in the Boston area.

CompEd

Advanced Technical Education

- Computer Workshops with hands-on training
- Professional Data Processing Instructors
- Comprehensive student reference material

DATA COMMUNICATIONS	Course #	March	April
CICS/VS Macro-level Applications Programming • Design, code and debug CICS/VS macro-level application programs • Invoke program, file, terminal and data management services • BMS input/output mapping	CICS01	8-12	
CICS/VS Command-level Applications Programming • Design, code and debug CICS/VS command-level application programs • Invoke program, file, terminal and data management services • BMS input/output mapping	CICS02 CICS02 CICS02	1-5 15-19 22-26	5-9 12-16 26-30
CICS/VS Testing & Debugging • Use program dump to diagnose abends • Apply Trace, Dump and EDF facilities • Testing techniques for CICS/VS environment • Program testing and debugging workshop	CICS03	29-4/1	26-29
CICS/VS System Design • Design systems that utilize CICS/VS facilities effectively • Use program, file, terminal and data management services • Format screens using BMS and 3270 IDS facilities.	CICS04	8-11	19-22
DMS/CICS/VS Design and Programming • Generate on-line applications • Utilize supervisor and system functions • Code calculation, edit, control routines • Apply panel hierarchy techniques	DMS01	15-18	12-15
DATA MANAGEMENT			
VSAM Coding for Higher Level Languages • Process VSAM files effectively via COBOL or PL/1 application programs • Load, read, update and extend key or entry-sequenced datasets • Use alternate index to process VSAM file	VSAM01	15-17	
VSAM Using Access Method Services (AMS) • Design and implement VSAM file structures • Use AMS commands to manage VSAM catalogs, data space, datasets • Create and use alternate indexes • VSAM recovery procedures	VSAM02	22-26	19-23
DATA BASE TECHNOLOGY			
DL/1 Applications Programming • Logical/Physical data base structures • Code DL/I calls to retrieve, update, add or delete segments • Build segment search arguments • Process status codes • Establish data base position	DL01	1-3	
IMS/VS Data Communications Programming • Describe IMS/VS message flow • Code DL/I calls to send and receive single or segmented messages • Design and code conversational programs • Use batch message processing facility	IMS02	4-5	
IMS/VS Data Base Design • Design data bases that effectively utilize IMS/VS facilities • Implement secondary indexing and logical relationships • Code and generate DBD's and PSB's • Define data base requirements	IMS04		5-8
PROGRAM & SYSTEM DEVELOPMENT			
DISTRIBUTED Processing Systems • Develop distributed system implementation plan • Describe distributed network components • Plan distributed data base management • Select applications for distributed processing	CS01	29-4/1	
OS/VS JCL Advanced Features & Utilities • Prepare, update and execute catalogued procedures • Code job restart procedures • Manage datasets • Select correct utility for specific function • Code JCL to execute utility	JCL03	15-17	

Inquire about availability of courses at client site

For registration materials and further information on specific courses, circle appropriate course numbers on coupon and mail to:

CompEd™ Call TOLL FREE 800-223-7822 In N.Y. State Call COLLECT (212) 921-8675

A Subsidiary of Spiridellis & Associates, Inc.
CompEd Technical Corporation, Inc.
1133 Avenue of the Americas, New York, N.Y. 10036

Spiridellis & Associates, Inc.

Yes, please send me information and registration materials for the courses circled below.

CICS01 CICS02 CICS03 CICS04 DMS01 VSAM01
VSAM02 DL01 IMS02 IMS04 CS01 JCL03

NAME _____
TITLE _____
PHONE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
☐ Please send information on future schedules.
☐ Please send information on Client-site courses

Learn Company Tactics!

What do employers really look for in a new hire? Technical qualifications? A professional image? Or maybe just someone to play golf with on Sunday?

Whether you're in the market for a job or just on the way up, 25-year DP veteran Jack French has this advice: 'Bosses tend to hire and keep people like themselves. If the boss plays golf and you do, too; if you play chess and he is a grandmaster; if you play football and he coaches; if you both went to the University of Illinois — you have an edge over other candidates.'

Learn about the variables in an employer's selection process — and use them to your advantage.

Companies vary in their requirements for DP professionals. Often they are not sure themselves what qualities are needed. Frequently a company will not know what human qualities are required to accomplish the DP mission, or it may not even know what the mission is. A company may advertise for a DP professional with one kind of background and eventually hire a person who only partially meets the requirements. The personnel department's resume collectors frequently do not know how to tell a superior DP candidate from a superior resume — and the best resume often gets the interview.

An ex-pro quarterback might get called before a professional programmer because someone heard that the Dallas Cowboys use a computer to test football plays. Ridiculous? Maybe. Nevertheless, the principle is valid. Examine some of the following variables in the employee selection process. The following are not necessarily indictments of companies, but simply show what happens when some organizations try to manage DP activity with inadequate employee selection criteria.

1. Testing. Many companies place emphasis on DP aptitude tests. Seldom do these tests really reveal who can perform various DP jobs best in the real world. Most tests show those who can pass tests.

Competency of DP personnel selected for jobs is defined frequently and *erroneously* in terms of job aspects, job description, competence in a parallel type of job over a long period of time on similar computer hardware and software.

Only infrequently do companies select or promote DP personnel on the basis of those characteristics and traits of people that contribute to accomplishing the job best. Selection criteria such as aggressiveness, attractiveness, personal friends, perceived ambitions and willingness to try unrealistic jobs hardly seem appropriate.

Realistic competency evaluation for DP personnel seems to be a long way off. There is little correlation among computer science school aptitude scores, professional DP performance and success. The hiring and training of more competent DP personnel sometimes may not be possible because in most companies the organizational structure does not permit encouragement of and reward for DP competency characteristics. The mediocre prevail.

2. Education. Most companies prefer job candidates to have a college degree because it is believed that a degreed person will absorb company training better and will be a more valuable and promotable long-term employee. Degrees in computer science and quantitative methods applied to business problems are the first choice. Advanced DP degrees do not necessarily carry more weight with a company. Technical and business degrees with computer programming courses are almost equally in demand. After three to five years in DP, a degree becomes less important if the DP professional has remained in the technical activity. Computer vendor schools and hardware and software knowledge then predominate. A programmer with a degree in a specialized area, such as finance, may not make the most of his specialty if he simply

This article is excerpted from Up the EDP Pyramid *by Jack French. Copyright © 1981 by John Wiley and Sons, Inc. Reprinted by permission of the publisher. Further information on the book, which costs $19.95, is available from Maribeth Payne at John Wiley and Sons, Inc., 605 Third Ave., New York, N.Y. 10016.*

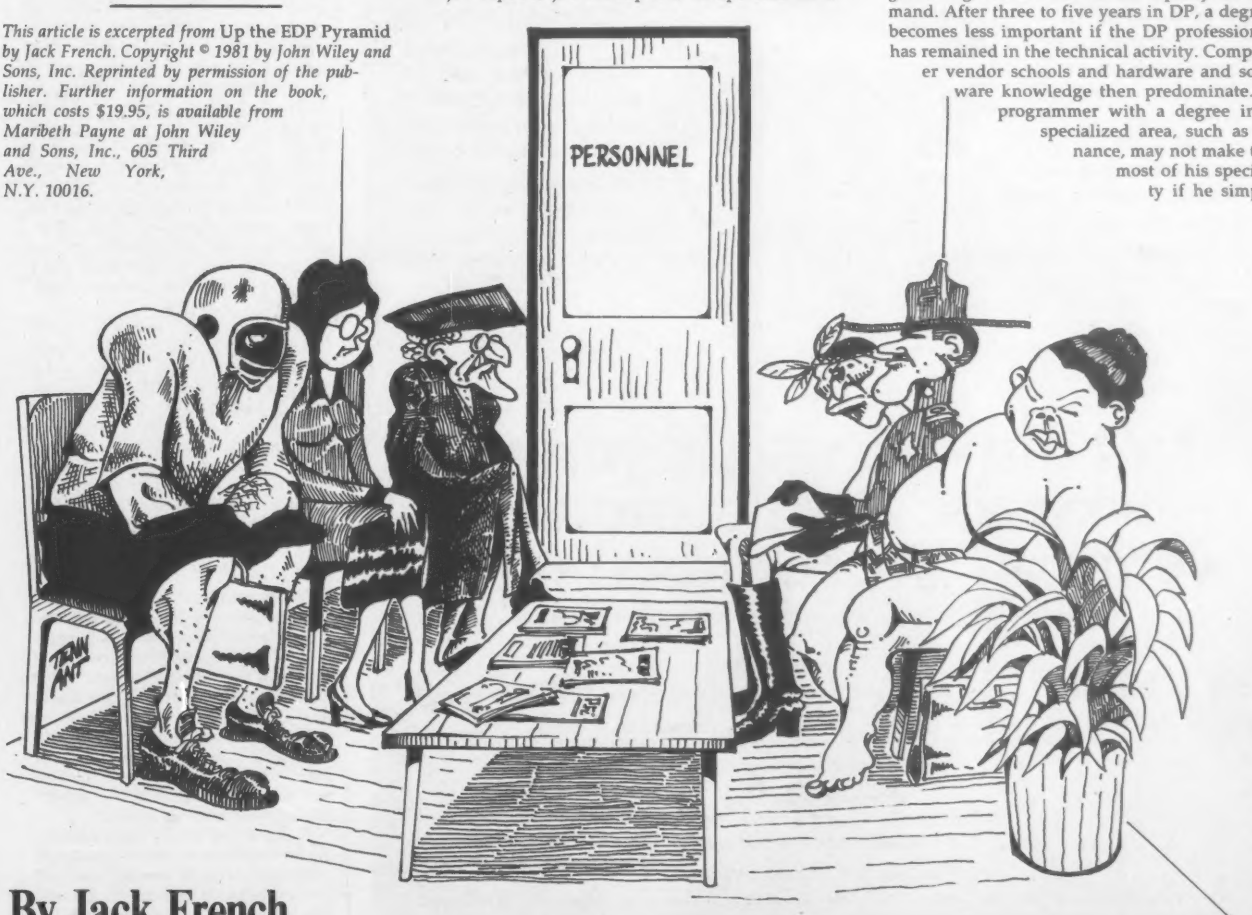


ILLUSTRATION BY RICH TENNANT

By Jack French

IN DEPTH

takes on any DP job assignments that come along.

Strangely enough, the school grade point average does not appear to make a significant difference in starting salaries. In fact, computer programming trainees with only an associate (two-year) certificate often start with salaries equivalent to those possessing a four-year degree.

As the DP professional approaches the managerial level, the power of the degree surfaces. Companies often select managers only from among degreed DP personnel. Seldom does a person without a degree climb to the top of a major DP pyramid.

Companies are always impressed by people who continue their DP career education in evening school. A position with a company that does not require a degree is usually regarded as a dead-end job.

The Institute for Certification of Computer Professionals (ICCP) offers the Certificate in Data Processing (CDP) and the Certificate in Computer Programming (CCP). The importance of these certificates is increasing, although in the eyes of most companies they are far from equaling certificates of the accounting profession, such as that for a certified public accountant (CPA) or for a certified managerial accountant (CMA). Most professions do depend for their substance on criteria such as public practice and responsibility, a code of ethics, a definable body of knowledge and standards, and DP seems to qualify in this respect as a profession.

Some companies sponsor examination review courses for candidates for the CDP and CCP. Many schools that offer degrees in computer science train their graduates so well they can pass these examinations without special reviews. In summary, certificates are valued by some companies more than by others, but it may be that the more letters you can accumulate on your resume, the better off you are.

It is this author's belief that until these certificates become really tough to get, they will be considered worthless by most companies. Standards probably won't be raised until a legal license to practice is required, perhaps based on industry standards, problems and practices. Since the only real standard developed in the computer industry to date has been the keypunch card symbol, it may be a long time before the DP industry establishes standards of performance — and their corresponding wage scale.

3. Personal attributes and images. Many companies like Boy Scout types. Personal attributes such as speech, dress, appearance, cordiality, conversational seriousness, humaneness, self-restraint and salesmanship may get you a good position even if you are short in some technical qualifications. Some companies may even create a position for you if you are their type of person. Consulting firms demand a professional image because you represent the firm in the client's office. Everything about you must evoke professionalism. Interpersonal skills may override technical deficiences, but technical skills will never override personal deficiencies.

Bosses tend to hire and keep people like themselves. An opposite would probably be a better choice — as a counterbalance — but after all, we are all human. You have an edge over other candidates if the boss plays golf and you do, too; if you play chess and he is a grandmaster; if you play football and he coaches; or if you both went to the University of Illinois. He will train you — no problem. Be sure your image closely parallels that of your boss.

Discrimination Factors

Clearly, discriminatory hiring and promotional practices often exist, even in DP. Among these are:

- *Age:* If you are over 40 and not at the managerial level, it is too late to worry about it.
- *Sex:* If you are female, you can always find functional jobs, but your chances of becoming a manager of men are not equal. You are acceptable as a *supervisor* of women.
- *Name:* If you have a name indicating an ethnic background, change it.
- *Marital status:* If you are married, you are okay. If you are single and past 30, you are odd or a swinger. Divorce is acceptable, but not at the

Lots of folks can sell you a box full of terminal equipment. But, how many of them will be there after the box arrives? We will.
That's because Continental Resources is a full-service organization. And as a nationwide sales and service company we can offer you 6 benefits they can't.
1. Up-front Advice
Our technical experts will work closely with you to determine which type of terminal, printer, or data communication equipment will best suit your needs . . . Before you buy.
2. Across-the-board-selection
Then you can select from among the best manufacturers in the world. DEC, GE, Dataproducts, Lear Siegler, Micom, Visual, GDC, IBM, Xerox/Diablo, Control Data and others.
3. Low-Cost Pricing
And the fact that we do volume business from coast-to-coast means that we can offer low prices to a one-piece end user and small OEM alike.
4. Immediate Delivery
Whenever you want it. That's when you get it.
5. Installation
Our technical staff will arrive at your convenience to install your terminal or printer, if you so desire.
6. Service Agreements
And then, we will offer you a post-sale service contract. At very reasonable rates.
P.S. We also offer rental and leasing contracts. Call it #7.
Not only do we fix you up with the right terminal, we fix up the terminal right.
and the printer right, and the modem right, and the disc drive right and....
CR
CONTINENTAL RESOURCES, INC.
The intelligent data terminal people
175 MIDDLESEX TPKE., BEDFORD, MA. 01730
Boston (617) 275-0850 • New York (212) 695-3206 • New Jersey (201) 654-6900 • Washington D.C. (301) 948-4310
Philadelphia (609) 234-5100 • Chicago (312) 860-5991 • Los Angeles (213) 638-0454 • San Francisco (408) 727-9870

LEARN COMPANY TACTICS!

IN DEPTH

managerial level unless you have been there for five years.

• *Appearance:* If you are ugly, you had better be good. If you are handsome, you are in until you are 40. If you are sloppy, you have had it even if they say they want a shirt-sleeves type. If you are overweight, you will get less money and lose opportunities. If your haircut is not right for your age, fix it. Always dress for success, even on the third shift.

• *Job tenure:* If you have changed jobs every year, you are more suspect than those who have three-year terms with some in-house promotions. You have a problem.

• *Language:* If your words are clear and crisp, you are better than the "grunt," "huh" types. If you can communicate and sell yourself, you know it and they know it. "You know what I mean" types cannot communicate. Four-letter words label you quickly.

• *Psychological factors:* People who can smile and go easy are better than uptight and aloof types. If you are dead serious about your work, you are ahead of the cynics and jokers. If you know who quarterbacks the San Diego Chargers, you are okay. Make your sexual advances off the premises.

• *Scores:* If you score high on company tests or have received honors, awards and leadership plaques, you are wanted.

• *Personal attributes:* Intelligence, creativity, honesty, ambition, goals, motivation, ability to listen, attention span, likability, ability to talk, memory, competence, high golf scores, independence.

Personal attributes make the difference. Know yourself.

Salary Levels

Companies believe your current earnings are a measure of your growth and present worth. Systematic progress is all-important. Questions will be asked if you are working either below or above a normal market value for your age or experience at given job levels and classes.

Many companies hire on an unrealistic DP budget. The personnel department may have acquired a DP salary survey and established a false set of salary ranges for DP job classes and levels. Instead of paying for an exceptional person with a productive capacity of three, two persons — each with a capability of one — are hired. After all, head counts build empires. Some think paying the going rate attracts and keeps good professionals. Wrong. It keeps the mediocre.

Progressive companies create positions for individuals they find, instead of forcing exceptional data processors into pre-established job descriptions and salary ranges. The best companies have open-ended DP salary ranges. Companies frequently believe that budgets and salary ranges control DP salaries. Wrong. The market controls salaries and companies match the group rate or get out. A progressive company will never pass up an exceptional individual for an extra thousand dollars. Companies spend that much on stationery in the personnel department, advertisements and applicant travel expenses.

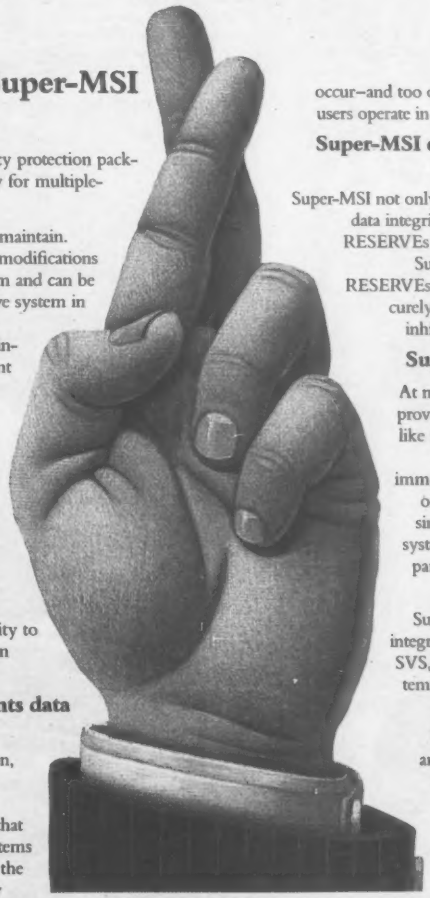
Generally, companies want to acquire the best possible candidate, but at the lowest possible cost. It is important not to earn too much above the going rate in your job level or class, or you will risk being replaced by someone from the outside who will work at a lower rate. Try not to accept a position where your salary is at the top of the range, because then only a promotion can get you a good pay increase with the company.

Management Experience

Companies often attempt to evaluate a candidate's potential by examining the level of management experience he has obtained over a period of years. They value an orderly progression through increasing amounts of responsibility and are wary of those who have not served their time in positions in higher management. While time alone is not a measure of managerial competence, the DP director who has never written a Cobol program, operated a computer or managed a project development team is highly suspect, unless he is the son of the vice-president. Many DP professionals are competent in dealing

Shared DASD Users:

Don't Leave Your Data Integrity To Chance.



Leave it to Super-MSI and be sure.

Super-MSI. The integrity protection package designed exclusively for multiple-CPU environments.

Easy to install. Easy to maintain. Super-MSI requires no modifications to your operating system and can be implemented in an active system in as little as ten minutes–assuring complete data integrity from the moment it is installed.

Super-MSI guarantees data integrity.

No complicated job scheduling. No elaborate control schemes. No software changes. Super-MSI spans intersystem activity to give "unified system" integrity to your entire multi-system complex.

Super-MSI prevents data destruction.

Inadvertent modification, simultaneous access... Super-MSI stops the damaging data abuses that multiply in a multi-systems environment. Prevents the errors that can so easily occur–and too often go undetected–when users operate in a multi-systems complex.

Super-MSI eliminates hardware RESERVEs.

Super-MSI not only completely protects your data integrity, it frees your systems of RESERVEs and RESERVE lock-outs. Super-MSI converts selective RESERVEs to logical controls that securely protect your data without inhibiting system throughput.

Super-MSI does more.

At no extra charge, Super-MSI provides other valuable features like the powerful Dataset Conflict Manager. DCM can immediately identify the source of dataset conflicts–within a single system or across intersystem activity–and inform all parties to expedite the resolution of conflicts.

Super-MSI works to preserve integrity under MVS, MVS-SE, SVS, MVT, VSI and MFT systems.

More than 350 installations around the world depend on Super-MSI for full data integrity. Call CGA Software Products Group. Set up a free Super-MSI trial and be sure your data is protected.

cga Software Products Group

(800) 543-7583 212 West National Rd., Vandalia, OH 45377 In Ohio, call collect (513) 890-1200

IN DEPTH

with computers, but lack the ability to deal with people.

Functional Skills

Many companies value functional skills highly. The quantity and quality of functional DP work you can produce is easily measured. For example:

- An 18,000-per-hour keystroke rate with zero errors.
- Five hundred lines of debugged code produced per day.
- Ninety-five percent CPU utilization by the operations department.

Professional DP functionaries know their production rate, because it is easily converted into a dollar rate of pay. In functional jobs, attendance, reliability, comprehension and exactness mean a great deal. Proximity to the work site and personal transportation mean you can help more readily in times of peak loads or emergency. Willingness to work overtime or second shift makes you more valuable.

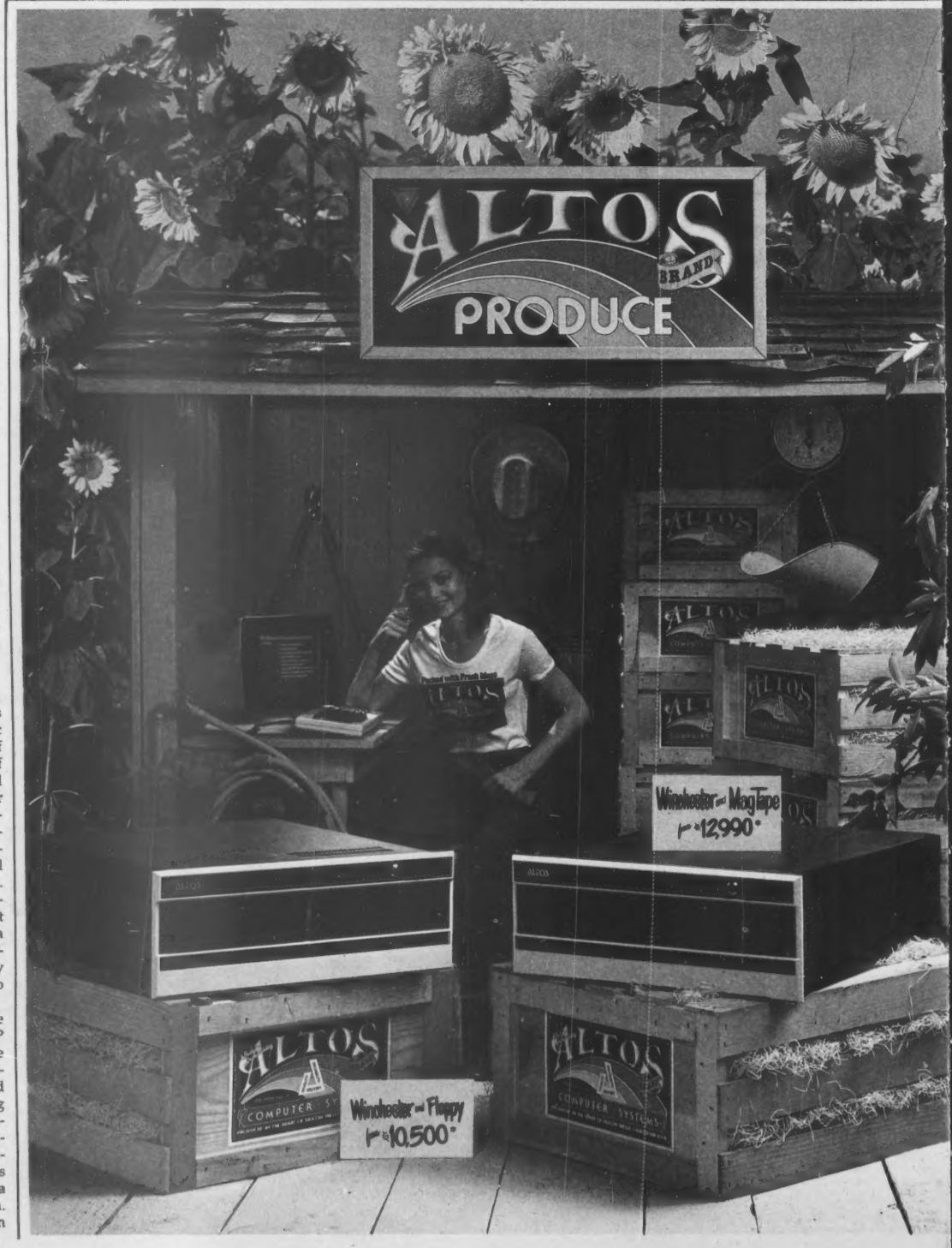
Where functional skills are emphasized, such attributes as creativity, knowledge, education, judgment and social skills are not of prime importance. In functional DP jobs, the company is hiring a human machine, not a person. The length of time spent in a job grade can have some effect on the pay rate, regardless of how productive you are, but only up to a point.

Specific Experience

Many company managers are hung up on the specific hardware and software of the company, regardless of the job level or the actual technical depth required for a particular position. Hardware and software background will often be specified in terms of a vendor and experience in terms of years. For many jobs at lower levels, specialized equipment and software experience can get you an immediate interview and job, since many companies do not care to train anymore.

Frequently, it matters little how much experience a DP professional has in alternate vendor equipment or software, experience that could easily be a basis for learning the company's computer machinery. Clearly, these companies are hiring a functionary for immediate skills rather than investing in a long-term qualified person. This policy may get you an initial salary increase, but you may be discarded when the need for your skill subsides or the company changes equipment. You may be phased into maintaining the old programs, while new personnel are brought in to accelerate new computer program development.

Experience in common business applications is clearly expected by hiring companies. Systems development activities in business applications support evidence of experience (see table on In Depth/5). Companies will hire a DP professional to utilize his special application experience to enhance their own corresponding business applications. If your background is ahead of their development, you have definite leverage to get a



LEARN COMPANY TACTICS!

IN DEPTH

good offer. Be sure you know your strengths in relation to their system.

Your ability to display your total self in the above-mentioned areas will help the company to determine whether you really have what it wants. If you are successful in clearly presenting your experience, you may get an offer above your expectations. If a company does not like you or your presentation, your experience buys you less, regardless of how good it is.

Company practices are never perfect. Some companies are better organized in their management of data processing activities than others. What companies want is rarely what they get. Love is ideal, but marriage is real. Frequently, companies hire and promote those they like rather than those who are best qualified.

In some companies, DP promotion from within is a lip-service myth. When management perceives that a change is needed because of a lack of progress or for political reasons, one group of adversaries is usually replaced. If you are on the team of a losing manager, you had better plan your future and pick a new boss, or get a transfer. It's called reorganization.

Bosses become very protective of good producers and they frequently succeed in clamping on the "golden handcuffs." In this situation you are earning too much to be considered for any other experience-building positions in the company. Some DP professionals do not realize this until it is too late. Then they must take a pay reduction to gain breadth of experience so they can proceed upward again. Some may instead trade their career to maintain their short-term standard of living. Two to three years is the limit you can wait for a promotion.

Few companies have true career paths planned for DP professionals, probably because the planners know little about DP and the DP management is too busy to establish the structure required to attract, acquire and keep a top-quality DP staff. Frequently, DP personnel budgets are set as a percentage of sales and no thought is given to the critical supply of and demand for DP personnel in the market or the upward movement of DP salaries. Data processing salaries are often pegged to other salary levels in the company. If

Common System Activities

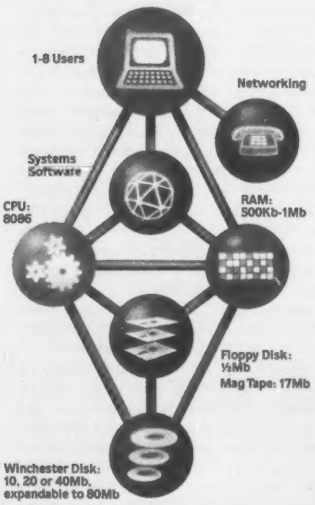
- Business requirements planning.
- System documentation.
- System design and analysis.
- Data base design.
- System flowcharting.
- Manual system and procedure design.
- System economics analysis.
- Forms design.
- Standard procedure writing.
- Data input formatting.
- Base-case formulation and testing.
- Computer operations instruction.
- System user-manual preparation.
- System user training.
- System control specifications.
- System marketing.
- Microfiche/microfilm studies.
- Computer printing studies.
- Computer microfilm studies.
- Project control planning (Pert).
- Information display design.
- Computer hardware capacity and performance planning.
- Computer software performance planning.
- System standards development.
- Long-range system planning.

HIGHER YIELDS

With the new Altos 8086, eight-user, 16-bit microcomputer family.

Altos, the multi-user networking and communications company, lets you enjoy a more profitable yield. Now you can effectively accommodate up to 8 users, with true multi-tasking, on your microcomputer system and get 16-bit 8086 multi-user performance and features at an 8-bit system price.

With the Altos ACS8600 family, you can perform bigger, more complex computer tasks. With a larger word size for more powerful instructions and direct addressing of more memory, you can do more jobs faster. And you can now handle complex mathematical problems, large data base searches and other demanding applications in far less time.



With the 16-bit ACS8600 family you'll get a unique set of features:

- Multiple processors (Intel's 8086, 8089 and optional 8087 math chip)
- Direct addressing from 500 KBytes to one megabyte using 64K MOS RAM memory chips
- Error detection and correction
- Proprietary memory management
- Full communications support (Async, Bisync & Networking)
- Integrated Winchester—10, 20 or 40 MBytes, expandable to 80 MBytes, with floppy or mag tape backup
- Multibus™ expansion interface
- Easy conversion of ACS8000 8-bit software and files to 16-bit ACS8600
- Four operating systems: CP/M-86,™ MP/M-86,™ OASIS-16 and XENIX™ (UNIX™)

Take a closer look at these features. Multiple processors work together to share the workload for faster execution and response time. A unique memory management system subdivides up to one megabyte of memory, automatically giving each user the maximum available memory. Error detection and correction reduces system errors. Full communications facilities support asynchronous and synchronous protocols to allow complete networking capabilities. In fact, every Altos computer has the capability to handle network data rates up to 800 Kilobaud.

Integral data storage includes a choice of 8-inch floppy disks or magnetic tape backup option, plus a choice of Winchester hard disk capacities from 10, up to 80 MBytes. A Multibus™ expansion interface allows the implementation of Ethernet,™ SMD mass storage, A-to-D converters, IEEE-488, digitizers and a 9-track tape drive.

The proven OEM supplier. The Altos ACS8600 family joins a growing family of field-proven products. In just four years, we've shipped more than 15,000 systems to our OEM customers.

Harvest a higher profit yield with Altos' 16-bit capabilities. Call our toll free number or write Altos Computer Systems today for product information and OEM pricing. (European Head Office) 39 Champs Elysees, 75008 Paris, France, (33-1) 225-9342, Telex 280888 MAISAL PARIS. (World Headquarters) 2360 Bering Drive, San Jose, CA 95131, (408) 946-6700, Telex 171562 ALTOS SNJ or 470642 ALTO UI. East Coast (201) 228-5748.

Packed with Fresh Ideas

ALTOS
COMPUTER SYSTEMS

800-538-7872
(In Calif. 800-662-6265)

*ACS8600-10 and ACS8600-10*MTU single unit retail prices.
Multibus is a trademark and *8086, 8089 and 8087 are products of Intel Corp.
CP/M-86 and MP/M-86 are trademarks of Digital Research, Inc.
OASIS-16 is a product of Phase One Systems, Inc.
XENIX is a trademark of Microsoft and is a microcomputer implementation of the UNIX™ operating system. UNIX is a trademark of Bell Laboratories.
Ethernet is a trademark of Xerox Corp.
© 1981 Altos Computer Systems

IN DEPTH

accountants are content with 4% raises this year, the DP staff should be, too.

Wrong! The hidden costs of turnover, advertising, new hiring, training and reruns are swept quietly under the rug by many company personnel departments because they have not learned how to display these costs to company management effectively. Only when the computer stops do they rush into action.

Conversely, many large, high-quality companies have excellent DP programs and consequently have attracted and kept many of the best DP professionals in the U.S. They know what they are doing. This activity of large companies has of course made it doubly difficult for smaller companies to compete for the less-competent remainder, but it has kept salaries moving up for everyone. These quality companies have good training programs and varied assignments and they frequently pay full tuition for those who are able to pursue evening courses. In some cases, good DP personnel are paid to pursue additional training on a released-time basis at full pay.

Last but not least, good companies have formal pay reviews, including standards of promotion and pay increases. Companies with formal reviews show clearly their concern for planning and evaluation of your work. You should question companies that give you pay raises only at their discretion and have no planned written reviews.

Ask to look at the formal review forms. Are they superficial or do they address the rating of your performance based on agreed-upon objectives, goals and formal standards of accomplishment in DP work? Ask what you have to do this year to receive a substantial pay increase or a promotion to the next job level. If the company can't tell you or tells you just to keep your politics clean, you are with a loser.

Some companies plan turnover by allowing you to reach your salary range limit, after which no subsequent higher level exists. Then they simply explain that they are cutting back, and you are terminated. Some DP professionals fail to see that they have been fired. They continue on for years with minimal raises and meaningless assignments and responsibilities. The company has already slotted them for departure, preferably before any retirement benefits have to be paid. Age soon takes its toll, and alternate in-house jobs become impossible to find.

Assignments, Practices

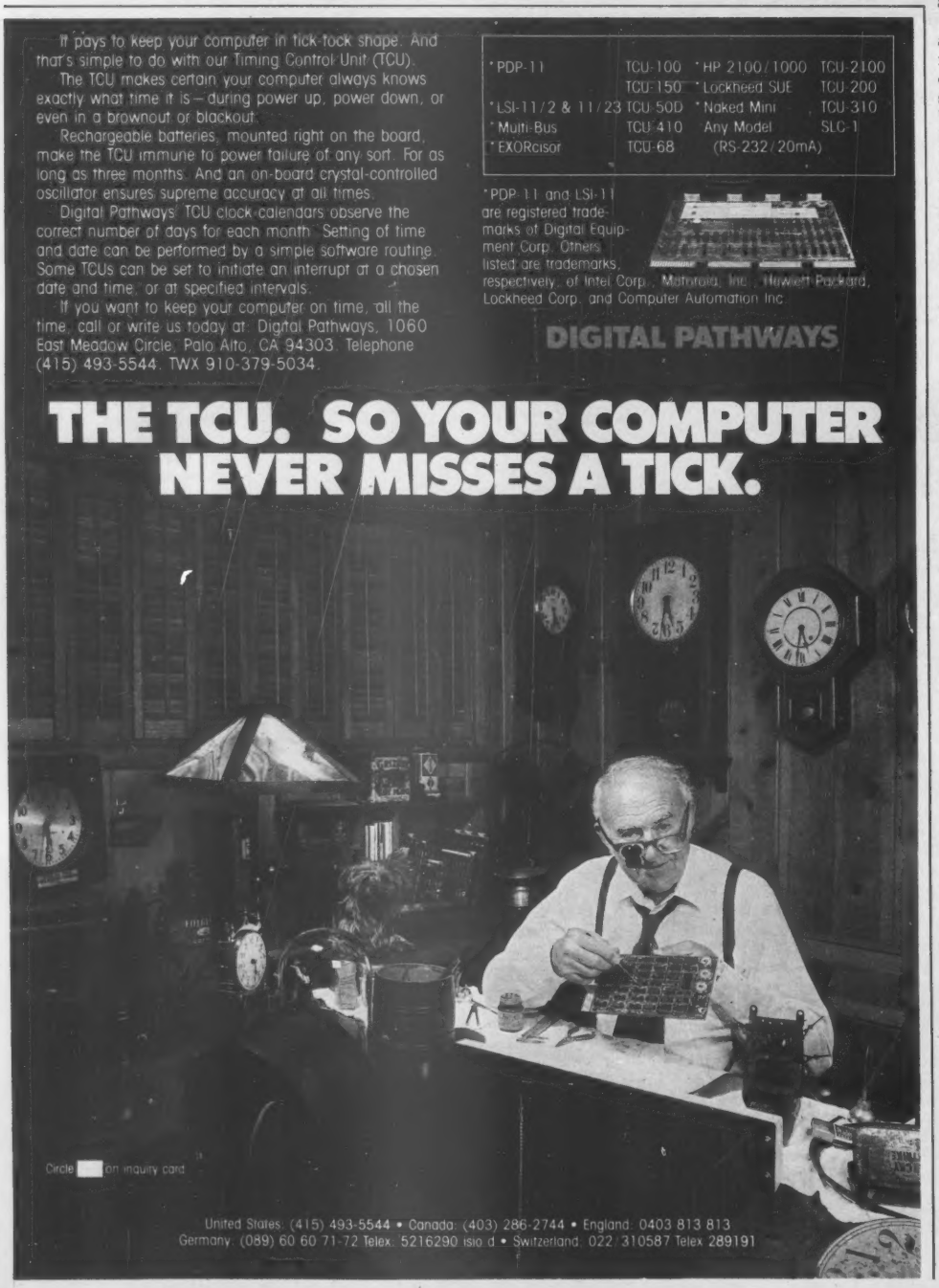
Many DP personnel careers become trapped by the needs of the company. Maintenance of a current system is an example. While others build the new system, you are stuck maintaining the old system until you are no longer needed. If you spend a year putting out fires or making minor enhancements without a definite date set for your new assignment, you should take a close look at your market value. Maintenance experience buys you less than new program-development experience.

Some companies structure data-input and computer operations as split and rotating shifts. Only part-time personnel may be used, so that benefits need not be provided. This reduces the ability of functional operators to procure a second job or even search for one. Programmers are sometimes called programmer analysts so that they legally won't have to be paid overtime and can work on Saturdays without pay — all for the big carrot that never materializes.

Companies will tend to keep you slotted in a position that benefits company operations. Fourteen-hour days without overtime pay is sometimes expected of you. A few lawsuits against this practice have been successful. Forget about those companies as career opportunities.

Sometimes only the departure of several key people will lead to a revision of work-assignment policies and salary schedules. Generally, personnel departments will not assume responsibility for not having watched DP assignments, hours, or salaries closely enough. Also, some personnel departments simply do not have the power to address DP management practices.

In order to protect the company, exit interviews will always reflect


It pays to keep your computer in tick-tock shape. And that's simple to do with our Timing Control Unit (TCU).
The TCU makes certain your computer always knows exactly what time it is—during power up, power down, or even in a brownout or blackout.
Rechargeable batteries, mounted right on the board, make the TCU immune to power failure of any sort. For as long as three months. And an on-board crystal-controlled oscillator ensures supreme accuracy at all times.
Digital Pathways' TCU clock-calendars observe the correct number of days for each month. Setting of time and date can be performed by a simple software routine. Some TCUs can be set to initiate an interrupt at a chosen date and time, or at specified intervals.
If you want to keep your computer on time, all the time, call or write us today at: Digital Pathways, 1060 East Meadow Circle, Palo Alto, CA 94303. Telephone (415) 493-5544. TWX 910-379-5034.
*PDP-11 TCU-100 TCU-150
*LSI-11/2 & 11/23 TCU-50D
*Multi-Bus TCU-410
*EXORcisor TCU-68
*HP 2100/1000 TCU-2100
*Lockheed SUE TCU-200
*Naked Mini TCU-310
Any Model SLC-1
(RS-232/20mA)
*PDP-11 and LSI-11 are registered trademarks of Digital Equipment Corp. Others listed are trademarks, respectively, of Intel Corp., Motorola, Inc., Hewlett Packard, Lockheed Corp., and Computer Automation Inc.
DIGITAL PATHWAYS
THE TCU. SO YOUR COMPUTER NEVER MISSES A TICK.
Circle on inquiry card.
United States: (415) 493-5544 • Canada: (403) 286-2744 • England: 0403 813 813
Germany: (089) 60 60 71-72 Telex: 5216290 isio d • Switzerland: 022/310587 Telex 289191

reasons for termination other than the actual ones. A typical one is "You know how computer types are" — whatever that means! It usually means that DP people have a better knowledge than personnel departments of exploitative job policies. Supply and demand take their toll.

Some company managers have unwritten agreements that they will not hire computer specialists from each other. This means that competition ceases to exist and practices can continue as usual. Sometimes such a company will inform another company if it receives a resume from one of its competitor's employees. Some companies pay up to 10% over the going rate to ensure the captivity of good professionals. They will cut your pay later.

In order to protect an account, computer vendors will seldom hire from one of their good customers. They will hire from each other. In fact, they will inform on you if they know you are looking. They may even think they are doing you a favor by alerting your management.

Project Participation

Participation in new systems projects can be the most effective way up the pyramid. Systems projects often follow patterns that can be described as phases:

- *Phase 1.* Wild enthusiasm in hiring (experts and consultants).
- *Phase 2.* Disillusionment with perceived schedules.
- *Phase 3.* Total confusion under pressure (management).
- *Phase 4.* The search for the guilty (who is to blame).
- *Phase 5.* The punishment of the innocent (those that are left).
- *Phase 6.* The promotion of the nonparticipants (the master politicians).
- *Phase 7.* Installed, but not with promised results (the functionaries).

While the above phases may get a knowledgeable chuckle from those who have been through some fiascos in systems development, it is clear that millions of dollars have been spent by some companies only to have the new president ask "Why did we ever do that?" The answers range from "It seemed like a good idea at the time" to "We simply don't know" to "The DP professional was a good salesman."

Good projects follow developmental phases described in many texts as follows:

- Current system definition.
- New requirements planning.
- New system design.
- Computer hardware and software selection.
- Economics evaluation and redesign.
- Conversion planning.
- Manual and computer program specifications.
- Computer programming/testing.
- System user training.
- System testing and conversion.
- System implementation.
- System evaluation.

Several of these phases are divided into subphases.

The point to be made is that major projects can fail if detail planning is not done extremely well and if the project does not have the full support of management and the functional users. You must know the status of the project along the way. If any of the phases are cut short or are not properly executed, your project team may be.

Improperly planned and scheduled projects can get so pressured that your teammates leave, and their burden is placed on you. The dilemma arises because so much knowledge is accumulated along the way; if key project members leave, it is virtually impossible to acquire new staff and maintain the project schedule originally established.

Watch out for managements that are not sympathetic to this situation. If the project is messed up, your career will suffer. If it is successful, you will progress. There is nothing so pathetic in an interview as having to explain why two years of your career were spent in a system failure, even if you were only a small part of it. Even your best references will have to admit that things just didn't go well.

You had better know if your company and its DP management have ever planned or been through a major project before. If a project is disin-

TTI's NEW 5-DAY

James Martin SEMINAR

James Martin

James Martin is described in *Computer Weekly* as "the computer industry's most widely read author and best attended lecturer." **10,000 attendees worldwide agree.**

James Martin is back . . .

Los Angeles	March 29–April 2, 1982
Washington, D.C.	April 5–9, 1982
Boston	April 19–23, 1982
Chicago	May 3–7, 1982

. . . with a completely updated Seminar!

TECHNOLOGY TRANSFER INSTITUTE

741 10th ST. SANTA MONICA, CA 90402 (213) 394-8305

It's time to attend again. Here's why:

Application development has not matched today's vast technological advancements. *Drastic* methodology changes are imperative for you to bridge this gap.

4th Generation Methodologies are needed NOW!

- Class IV Data Bases
- Distributed Systems
- 4th Generation Networks
- Application Generation
- Information Engineering
- Office of the Future

All these topics are new at the James Martin Seminar

- Methodologies for application creation
- User-driven computing
- Methodologies for strategic planning
- Personal computers
- Superintelligent networks
- Network management tools
- Information center concepts
- Techniques analysis
- Business graphics
- Open systems interconnection
- Automated application generation
- Nonprocedural code
- Event Diagrams
- Intelligent data base
- Entity supergroups
- Stability analysis
- Automation of data base design
- Application development without programmers
- Ethernet and its alternatives
- Alternatives to BSP
- Information resource management
- 1000% improvement in application creation productivity

Call or write for more information today:

(213) 394-8305

Please send me information on:

The New James Martin Seminar

NAME

COMPANY NAME

ADDRESS

CITY/STATE/ZIP

TELEPHONE

CW 2/8

IN DEPTH

tegrating before your very eyes, you had better have sense enough to get out while you are still on your feet.

Some dumb managements apply whips, asking for 25-hour days and all weekends to prove that they can make things happen. Your blood, their guts. Outside of shear boredom, the turmoil of the pressure caused by poor planning is probably the most important cause of DP turnover. As Rudyard Kipling said, "More good men are killed by overwork than the importance of the world justifies."

Companies think new systems will work well; in reality, they generally work poorly or not at all. New computer systems do not change the way things are done in most companies, but only speed things up. New systems tend to grow up primarily to kill new problems the system itself has generated. They seldom meet the new requirements originally perceived. More paper, more volume and more higher priced technical help spur on new technology so that the system cycle can be repeated.

Don't Tamper

If a system is working, leave it alone. The DP plan often fails to consider that the single most important factor in success is the procurement of the best DP personnel. First and foremost, a capable DP person to lead the effort must be found. He must be able to:

1. Win the respect and confidence of top management.
2. Attract the competent people.
3. Utilize his staff effectively.

Many companies spend a fortune on computer hardware and software, then hire dummies to make it all work.

Long-Term Goal

You must be able to make each successive job or project more meaningful and each accomplishment more significant than the one before. Although this article emphasizes more short-term accomplishments in your beginning years, you will ultimately have to engage in some long hauls, participate in some larger team efforts and engage in some longer, more complex activities in order to achieve greater responsibilities. Job jumpers always ultimately fail.

No company practices are perfect. Clearly, the successful DP professional will make sure he is engaged with good companies, is assigned meaningful projects and achieves recognition.

Some companies recruit quickly. Some are so slow that they lose three waves of good applicants before they choose. They are waiting for the perfect applicant, who doesn't exist. When they find the candidate with the right qualifications, frequently the candidate is overpriced or will not do a repeat performance for money alone because he needs a different challenge for career purposes. The company does not want to train anyone. With the right prompting and good exposure, you could get a promotion. Companies are often more critical of their own, because they know you too well.

The search goes on. There are no perfect companies, jobs or applicants. There are no perfect matches, but some are pretty close. When does the search end? When the company is tired of looking for the perfect one and gets realistic about the opening and what it takes to fill it.

Remember, companies will often act independently of your opinion. Never place company loyalty above loyalty to yourself in the holy neurosis of competition.

Now you are in a position to plan your career.

About the Author

Jack French is currently data processing director for Robert Half Associates, an employment agency. He has been involved in directing DP activities at companies such as Xerox Corp., Federated Department Stores, Dayton-Hudson Corp., Service Merchandise Co., Touche Ross & Co., NCR Corp. and Sundstrand Corp.

French holds a B.S. in management from the University of Illinois, an MBA in finance from Northwestern University and a Certificate in Data Processing from the Institute for Certification of Computer Professionals. He is also a board member of the Data Processing Management Association.‡

Who will be first with the software of the future?

It could be you and Hughes Ground Systems.

Today Hughes warning systems form rings around the world. Throughout the NATO countries, the Far East and the United States, Hughes sonar, radar, communications, computers and displays form interactive systems serving whole countries — all dependent on advanced systems and software that you could help develop.

From undersea to outer space, there's really no limit to your career in software at Hughes.

And to facilitate your work, we've assembled a division comprised solely of software engineers. We've created the world's newest, most sophisticated software environment. You'll work with your own terminal on a fully interactive software development system that includes graphics aides and simulation support for software design.

And if you're qualified, we'll show you an incomparable career path to the top of the field. It's all at Hughes, with 1,500 projects and a backlog of over $6 billion.

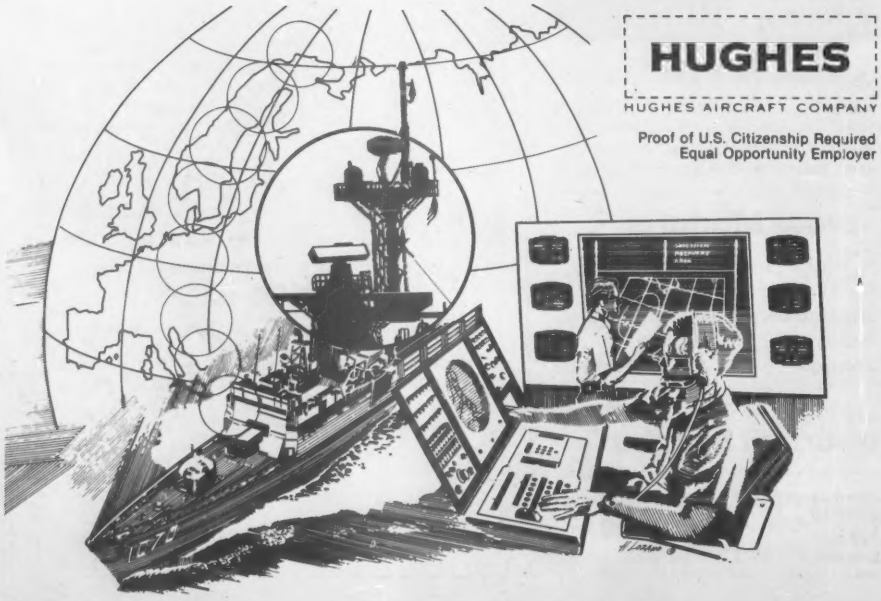
Who will be first with the software of the future? It could be you and Hughes.

At Hughes Ground Systems, we'll introduce you to people, ideas and jobs that could change your world. And maybe ours.

Call or send resume to:
Hughes Ground Systems
P.O. Box 4275, Dept. WC-2B
Fullerton, CA 92634
(714) 732-7098

Current openings:
Software and Systems Test Engineers
Software Engineers
with experience in:
Air Defense Systems
Command and Control Information Systems
Communications Systems
Data Management Systems
Radar Control Systems
Sonar Systems
Software Systems Engineers
with experience in:
Distributed Systems
Software Development Environments
Tool Development and Graphics
VAX-VMS
X.25 Communication Standards

It could be you and Hughes
Ground Systems

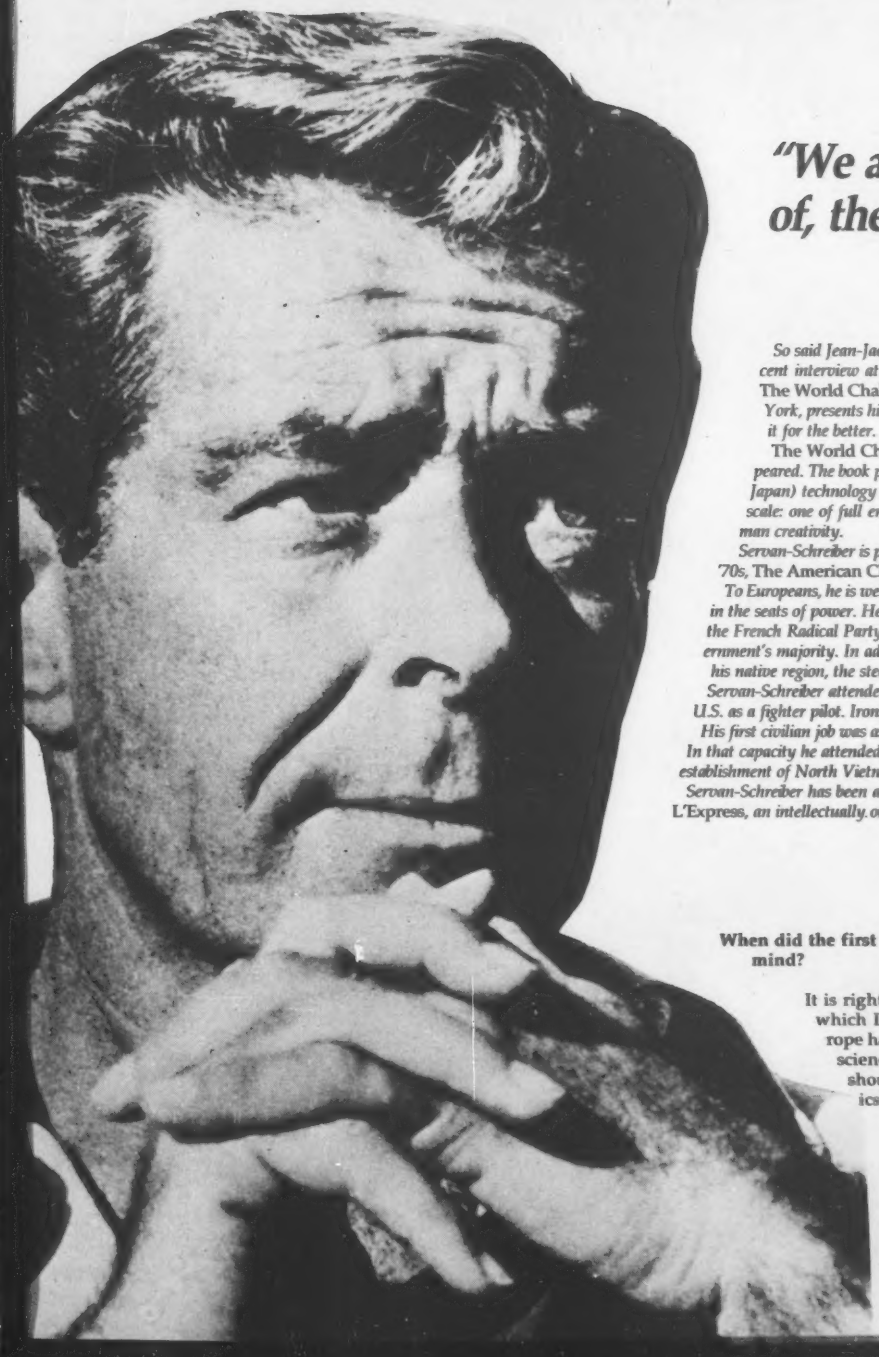


HUGHES
HUGHES AIRCRAFT COMPANY

Proof of U.S. Citizenship Required
Equal Opportunity Employer

IN DEPTH INTERVIEW:

Jean-Jacques Servan-Schreiber



"We are witnessing the birth of, the emergence of, the first truly human society."

So said Jean-Jacques Servan-Schreiber, noted French journalist-politician, in a recent interview at his holiday home in the French skiing resort Megeve. His book **The World Challenge**, *published in June 1981 by Simon & Schuster, Inc. of New York, presents his belief that the microprocessor will change the world, and change it for the better.*

The World Challenge *has dominated the French bestseller list since it first appeared. The book proposes an alliance of Western know-how, Pacific (California and Japan) technology and Arab money to create a new societal order on a planetwide scale: one of full employment, new social freedoms and limitless possibilities for human creativity.*

Servan-Schreiber is probably best known in the U.S. for his bestselling book of the early '70s, **The American Challenge**, *which is partly about the impact of America on Europe. To Europeans, he is well-known as a member of the European Establishment, one at home in the seats of power. He has a history of deep political involvement. He was the leader of the French Radical Party, a non-Marxist left-of-center party that now is part of the government's majority. In addition, he has served on the French Cabinet and was president of his native region, the steel-producing Lorraine.*

Servan-Schreiber attended France's prestigious Polytechnique and was later trained in the U.S. as a fighter pilot. Ironically, his countrymen sometimes call him "the American."

His first civilian job was as an assistant to Prime Minister Pierre Mendes France in the '50s. In that capacity he attended the peace talks between France and Ho Chi Minh that led to the establishment of North Vietnam.

Servan-Schreiber has been a writer for France's largest newspaper, Le Monde, *and founded* L'Express, *an intellectually oriented French weekly.*

By Rex Malik

When did the first glimmerings of *The World Challenge* appear in your mind?

It is right in the conclusion of my book *The American Challenge*, which I wrote 10 years ago. My conclusion then was that Europe had to forget the rendezvous it had missed with industry, science, technology and so on and that by 1980, Europe should be focused on the information systems and electronics industry.

I did not know at the time exactly what it meant, but I had an idea. Since then, I have tried regularly to keep myself informed.

Were you able to do that while immersed in politics?

I did not have much time to further my studies of these things. I found myself becoming pro-

IN DEPTH

gressively ignorant of technology, which I found embarrassing because as an editor, and as a journalist, I was used to keeping myself well informed.

My colleagues in politics are very hard-working people. Yet they cannot read anymore. It is a very dangerous aspect of present-day democracy. It is abysmal. These men are meant to lead the nation in their debates, their councils. Yet they — we, for I was one of them — are ignorant of the new facts of the world.

I was very frightened by that. So when I got an occasion two years ago to start becoming less active in politics, for the moment, and go back to learning, I jumped at all the offers and invitations to attend seminars and the like.

But why this particular book at this time?

Last March, when the Brandt Report on the North/South problems was published, we found it incapable of reaching the number of people required. So I was asked to try to write a book on these new problems of technical development, a book that could reach a larger audience.

As soon as I started reading about informatics, electronics and so on, I felt I understood that it was going to be a major revolution of the same magnitude as the invention of printing and the invention of electricity.

It would not only change the industrial system, but it would go to the root of the social fabric and give a completely new dimension to the development of the human being. In fact, what I think I know now is that we are witnessing the birth of, the emergence of, the first truly human society.

There has never been a human society. The human being has always been a slave to nature or a slave to machines. I believe that the computer society will, for the first time, make man capable of fulfilling his own personality.

Those are very deep waters, aren't they? Animals and men have had to live the same sort of life from time immemorial. Both have had to work to stay alive.

The problem is that work is the foundation of the social order. If you take the pressure to work away, and it is happening now, then the social order we know starts to break down.

It is breaking down.

Suppose that the future does lie in what we can call the "information society." The structures and disciplines of that society will be different, and the interim can be quite long. How do we get there from here?

I agree with you when you suggest that the present period of transition is very dangerous. I would say that the next three to five years are the most dangerous. We will see all kinds of conflict, all kinds of chaos.

We will see increasing unemployment, dislocation of the social order and the agony of ideologies. Nobody can

PERQ®
The unshared computer
10 Mbs on the Ethernet highway.

Now, for the first time, there's a network capable of keeping up with PERQ's extraordinarily fast processing and response time. With Ethernet,™ PERQ® gives you instantaneous access to all resources on the network, such as files, printers, other I/O devices – even other mainframes – plus all the speed of a dedicated single-user computer.

In real terms, what it means is this. Instead of taking as long as 44 seconds to transmit 10 pages of data, the transfer takes place in .042 second. In the 4.4 seconds it would take a conventional network to send one page of War and Peace, with PERQ and Ethernet, you could send the entire thousand-page novel.

The PERQ single-user, microprogrammed computer system is truly unshared. PERQ gives you all the power of a mainframe, executing over 1 million Pascal Q-codes per second in user-modifiable microcode, but without the wait time associated with time-shared systems. Need more computing power? Just add more PERQs. The high-resolution display is unmatched. The display's 800,000 addressable points are completely refreshed 60 times per second.

PERQ with Ethernet. A revolutionary computer. A revolutionary network. To find out more, write or call us today at 412-621-6250.

Three Rivers Computer

* PERQ is a registered trademark of Three Rivers Computer Corporation.
* Ethernet is a trademark of Xerox Corporation.

USA AND CANADA: Three Rivers Computer Corporation, 720 Gross St., Pittsburgh, PA 15224. (412) 621-6250 TWX: 710-664-4490.
Offices in Hartford, Washington, D.C., Atlanta, Pittsburgh, Chicago, Dallas, Los Angeles.
EUROPE, ASIA, NEW ZEALAND, AUSTRALIA, SOUTH AFRICA: contact your local office, International Computers, Ltd.
JAPAN: Riken Corporation, Shinjuku Nomura Bldg., 1-26-2 Nishishinjuku, Shinjuku-ku, Tokyo 160, Japan. (345) 1411.

be very optimistic for those years.

So what should we do? We should inform people. I am terrorized, really, by the fact that so few people even know what we are talking about or even know what it means.

That is one reason why I am going ahead so fast. I don't think I am going to save the world, but I think I should set a little example for others to follow. The most pressing need is to create a number of people who are informed about what we are facing.

My region of France is Lorraine, the steel region. Now these people are seeing their steel factories breaking down, as they are all over Europe. The steel crisis has been abominable for the past five years and is getting worse. When they see this, the union people, the politicians and the industrialists don't even know that there is something coming afterwards. They want to keep what they have at all costs, not knowing there is another future coming.

If they knew the bare facts about this future society, it would change the way they look at things. Instead of being discouraged, they would change and break out into other directions.

So, the most urgent thing to do is to inform people and debate. Nothing is easy about this information society; it is complex. Its birth, like all births, will be painful. We will have to learn many things. Many people will not learn them, so they will suffer. It will be difficult.

Debate is the only way to make things more clear to people so they will see what the information society means, what it needs, how they should bring up their children, how they should study. And all these things cannot come from books or lessons; they can only come from live debate where the individual himself is involved.

But is there not a danger here? As far as the public is concerned, more computers and more robots equal more unemployment.

That is one of the most dangerous falsehoods. From what I know, or feel, or envision, it is going to be a society of full employment for the first time in history. I have great confidence that this computer society will create much more employment than we ever had in the industrial society. But it is not all obvious at this point.

At the beginning, it means unemployment, but only if we have not prepared people for the new jobs that are to be created automatically by the information society — by the new social tissue of the information society.

There will be new jobs — new kinds of jobs — that require thinking, judgment, human feelings and all the attributes of humans that are crippled by the industrial society and that will have to blossom to be useful and creative in the information society.

All that may be obvious to you and your readers, but it is not at all obvious to the public. They do not know that beyond unemployment

This is what trouble-free network management looks like.

The New Intertel 90/10.

Corporate management sees things one way. Datacomm managers see things another. We're out to close this gap with the only truly effective network control and management system available today. The new Intertel 90/10. It speaks to the needs of both corporate and datacomm managers.

The Intertel 90/10 gives datacomm managers all the network monitoring, diagnostic control and restoral power they need. With an aggressive service program that provides "Guaranteed Uptime". And it's a vital report-generating tool that gives corporate management the data to improve service, increase profits and plan for the future. Intertel 90/10... the most advanced network management system on the market. It's closing the communication gap fast.

Send for our "Gap" brochure today. You'll like what you see.
Intertel, Inc., Six Shattuck Road, Andover, MA 01810. 617-681-0600.

We Communicate

IN DEPTH

there is another kind of employment. There is not only greater employment in numbers, but there is more fulfillment of the human being. Of that I am totally certain.

There is a snag, isn't there? Every time one says to the optimists — and if I may put you in their number — "Alright, so computers are going to create employment. Give me one major example of jobs that are waiting to be done, jobs that will be done by computers and people," no one can ever come up with any."

The computer is always cheaper than cheap labor. There is no way to compete with computer production. The history of Japan shows that.

We are coming to the end of cheap labor. There is no option, it is inevitable. Now as for examples, I think jobs are being created by the computer while it is at the same time killing the normal routine jobs. First, there are all the jobs in the computer field, especially in software.

As you well know, there is a large demand for software in America and Japan. They are always crying and shouting to get more people into the field to meet the demand for software.

That is one field, not large enough, but it is a large field. One Japanese expert has said that 10 years from now the information industry — which includes the computer industry — will employ more people than the automobile and steel industries combined, and that is very large.

I think this will be true. The automobile industry in America today is employing directly and indirectly 20% of the active manpower. In Europe, it is 16%.

Given that the industry will grow to the level you speak of, then obviously it will soak up a lot of what would otherwise be unemployment. How will power and responsibility be distributed among those new positions?

The society that is coming will be different in so many ways from the present society. Most important, it will be much more decentralized. We are getting away from the large cities, away from the large factories. Total decentralization.

If we do not go that way, we are going to kill ourselves: we will end up with dictatorship.

Our society will become much more scattered, going more and more toward small teams, small villages and the individual. And so there is a whole social fabric that will have to be invented to link these individuals. This will be made up of men and women. No computer, no technique, no mechanism will replace the human tissue that will create the society.

I will cite two examples, at the beginning and end of life. Those who have studied the infancy of the brain have discovered — and there is no controversy about this, it is unanimous — that we have been destroying a large part of the human capacity by not taking proper care of children at a very early age.

I made the care of very young children a major part of the manifesto of our radical party. We were speaking of children of the age of two in our manifesto. Now in Japan, they are teaching six-month-old children to swim. They are teaching children to play the violin at a year and a half to two years old, with superb results — not only for the music, but also for the brain.

It takes a large number of men and women capable of training children. That is one example of what the computer will not be able to do. It takes affection, it takes human feeling, it takes all kinds of things of which, I believe, only humans are capable.

This last category of jobs one can call educational. They require public funding in some way. With the continued resistance to high taxation, how do we get the money to fund them?

[It will be funded] because it is a good investment. It is the best investment because it will create riches. The computer only has meaning if you put the human brain into it. The computer is nothing: Everything is software. So the most sensible investment is the development of the human brain. That is the essence of the future: that is the creation of riches for the future. So this will be recognized as an investment.

There is another investment I want to propose to you, and I have seen it work. We shouldn't be throwing away the older work force. The retirement age in France is going down to 56 years old in an effort to reduce unemployment. This is abominable,

Proven hardware.
Last year Control Data sold more than $1 billion of peripherals. That's a lot of experience in meeting customer needs for greater reliability and better price/performance.
We know hardware and we know large systems. And as the world's leader in peripheral technology, we know how to help you reap the full potential of your IBM mainframe. Call us. 612/853-7600.
CONTROL DATA
Addressing society's major unmet needs as profitable business opportunities

Value-added software support.
Control Data has one of the world's largest software teams working exclusively on IBM operating systems.
Why? Because the right software support is needed to get all the performance possible from your IBM system—in-depth software support just not available from an ordinary "PCM." Call us. 612/853-7600.
CONTROL DATA
Addressing society's major unmet needs as profitable business opportunities

IN DEPTH

because a man of 56 should have a very active life. You are telling him, "Okay, your life is finished. You get some money to cover eating and sleeping, but your life is over."

That is a reflection of the economic order we have built up.

Absolutely. But in a more civilized society, which goes with an information society, people are never out of use. I have seen in Japan and in Asia people of 70, 75, 80, 85 years of age being very useful to others.

In many ways, it is the "third age." The "65 and over" group is a very crucial element of the future. And it has been discarded completely by the industrial society.

You have said that the development of the microprocessor will force structural change on a planetwide basis.

There is an inevitable logic to the development of the application of microprocessors; it is worldwide. It is absurd to imagine the development of the microprocessor in regional terms. It is worldwide by essence.

Now take the largest library in France, the Bibliotheque Nationale. You put that on computer memory in some form, which will be done, although it is a vast investment. But once you have that, you do not have to do it twice. And it can then be put at the disposal of every single village in the world, via a telecommunications link. However, it becomes intelligent to do it only if it is for the whole world.

The industrial era, for a century and a half, could ignore the rest of the world, except for moralistic reasons, which are never very efficient. Mechanically, however, the effects of the microprocessor are worldwide. This is the historical change.

Has this been recognized anywhere?

While I was studying in Japan, the planning staff of [the Ministry of International Trade and Industry] Miti produced their basic report for the '80s. It is called "The Deindustrialization of Society." The collective aim of the society is to get away from industry. There will be robots, but people will otherwise be away from industry and they are not shy about talking about it.

'America will become a noncapitalistic nation sooner, perhaps, than any other. It will move into the future very suddenly, very fast. There are no taboos, you see.'

At the same time I was studying that, the debate was raging in America about the reindustrialization of America.

That is the one way to preserve the existing power structure.

There is no way.

But what happens in your new society, your "new order," to a country like America, *the* capitalist society?

Never underestimate America. America will become a noncapitalistic nation sooner, perhaps, than any other. It will move into the future very suddenly, very fast. There are no taboos, you see. They are not like European societies; they do not respect the past.

That is why President Reagan is so outmoded — because Reagan *is* the past. He means nothing because he is the past. This is the last experiment of America with the past. After that, it is the future.

Conservative leaderships often precede a switch.

Usually, it is like that. Revolutions are often preceded by a switch.

I can foresee one problem arising with the information society — that man is going to be driven back on himself. There is an old American saying, for a society where people judge others by what they have: "If you're so clever, why ain't you rich?" It may well become, "If you're so rich, why ain't you clever?"

The changes you foresee are frightening, I think, to an existing

Systems-smart service.

Control Data operates some of the largest DP systems and networks in the world. So we know your service needs because we have them, too.

That's why we have thousands of customer engineers to back up our products. Trained in IBM systems, they know how the hardware works within the system. Or in your network. Our systems-smart service team even knows how to fix your IBM mainframe. Call us. 612/853-7600.

CONTROL DATA

Addressing society's major unmet needs as profitable business opportunities

Other PCM's sell you product. We meet your needs.

That's how Control Data has become the world's largest independent supplier of computer peripherals.

And why we have:

- proven hardware
- value-added software support
- systems-smart service

and thousands of satisfied customers. Call us. 612/853-7600.

CONTROL DATA

Addressing society's major unmet needs as profitable business opportunities

IN DEPTH

generation that has grown up working a 40- to 44-hour week, comes home tired and does not have time to think.

But they are not frightening for the young.

I could picture a future for the industrialized countries and societies where we have spent hundreds of billions of dollars for 80 to 100 years on education, where we have some form of social discipline and social order that tends to match our technology; the two have grown together. I can see people using computers at home to do new things. I can see people relying on computer services, and I can see many of the tasks of this society being done by computers while we are freed for other activities.

But what about an agricultural society? Take a typical village in India. Where is the necessity for the microprocessor? Can you imagine an Indian village that has missed out on the industrialization stage going directly to microprocessors?

First of all, there will be much better agriculture. The absolute first step is more efficiency in agriculture and towards that end, the microprocessor will help a great deal. But it is not the total story.

This same Indian village with the same land and the same people should not only be able to feed itself, but also be able to export food, something that it can rarely now do. First, the microprocessor will help make agricultural work more efficient. Second, we are fast approaching the next stage of the revolution, bioengineering, which is in fact microprocessing in living cells.

It is the same thing. You are going to program those cells to make life itself a microprocessor — a much more powerful one than ever before! And this is the real revolution — it will create energy, it will create food.

When you talk of the introduction of computing into the countryside of the Third World, can we look forward to experiments? Can we foresee, say, a dozen machines, a power supply, software, a programmer or two and a maintenance engineer going into a village in India or Africa, to see what can be done and to explore how the technology can be used?

The Group of Paris [the study team with which he is involved] has plans for pilot projects and it will trigger them and help them start. We have two pilot projects in India, with the agreement of Mrs. Gandhi. We have another in Senegal in Africa. We are going to multiply these projects as fast as we can.

It is obvious from our discussion that we are entering crisis years. But we have been in crises before, and we have survived. Is it really necessary to change? If so, how urgent is it for us to change?

At the present time, the real concern is to go from the present state of history to the next one as fast as possible. It is a race against time because the crisis is coming upon us very rapidly. If we let the crisis win the race, then we will have massive unemployment and misery. Nobody will ever listen to people who have an idea of what is coming next. People will be so miserable and so angry about the whole state of the world that they will go for dictatorship, revolution and any kind of order without thinking of what could be.

And this is the real problem, because this is how people's minds get closed. They don't believe anything anymore. They are just miserable and angry. That was the root of fascism and Hitlerism in the 1930s. People were so miserable that they wanted order at all costs.

Time is our greatest enemy. The only way to win the race is to have imaginative ideas and practicable ideas very rapidly.

The interviewer, Rex Malik, is a London-based freelance writer and a 25-year veteran of computer journalism. He is also a consultant to the British Broadcasting Co. for its computer literacy series.

THINK
IBM.
THANK
SORBUS.

Think IBM when buying.
Thank MAI/Sorbus for servicing.

Sorbus® services more IBM equipment than anyone but IBM. In fact, we think so much of IBM and their equipment, we charge about 20% less for a service contract than they do.

We can do that because of our *regular preventive maintenance program.*

Your Sorbus service representative is constantly keeping an eye on things. Helping to prevent little problems from becoming big ones.

So, if you think your IBM System/3, 34, 360, 370, or even an old unit record system can still do the job—great. Don't buy a new system. Thank Sorbus for keeping the one you have going.

MAI Sorbus Service®

Sorbus Service Division of
Management Assistance, Inc.
50 E. Swedesford Road
Frazer, PA 19355
(215) 296-6000

the Cashless Society

By August Bequai

Electronic funds transfer (EFT) systems are already spawning new forms of complex, white-collar crime. The author envisions serious problems for our police, prosecutors and the general criminal apparatus in an increasingly cashless society.

A 27-YEAR-OLD MARYLAND housewife, who learned about electronic funds transfer (EFT) systems from a television show, robbed her local bank of more than $30,000 in a fraudulent wire transfer. Thieves in Florida, armed with a knowledge of computerized bank cards, nearly defrauded a Palm Beach bank of $2 million.

In Los Angeles, two men were arrested and charged with a $1.1 million illegal wire transfer. An employee of a Washington, D.C., money market fund and her husband reportedly embezzled more than $1 million from her employer in an EFT fraud; the husband had taken a short course in computer programming.

Increasingly, America is becoming a cashless society. Paper is giving way to electronic blips. Rudimentary EFT systems have already taken root, and hundreds of billions of dollars are transferred daily over the wires. Thousands of computers are used to record these cashless transactions, while an army of more than 500,000 men and women operates these cashless systems.

The cashless society will have a growing, profound impact not only on our financial institutions, but also on our social and political machinery. Questions are being raised regarding the ability of our criminal justice system to adequately address EFT-related crimes. The computer revolution

IN DEPTH

Records of White-Collar Crime
(In Billions of Dollars)

Category of Crime	Small Business Administration	Chamber of Commerce of the U.S.	American Management Associations	Joint Economic Committee
Arson			1.3	
Bankruptcy fraud		0.08		
Bribery, kickbacks, payoffs		3.0	3.5-10.0	3.85
Burglary	.958		2.5	
Check fraud	.316	1.0	1.0-2.0	1.12
Computer-related		.10		.129
Consumer fraud		21.00		27.0
Credit card fraud		0.1	0.5	.500
Embezzlement		3.0	4.0	3.86
Insurance fraud		2.0	2.0	2.50
Pilferage/employee theft	.381	4.0	5.0-10.0	4.84
Robbery	.077			
Securities theft/fraud		4.0	5.0	.291
Shoplifting	.504		2.0	
Vandalism	.813		2.5	
Receiving stolen property		3.50		
TOTAL	**$3.05**	**$41.7**	**$29.3-41.8**	**$44.2**

Annual Cost of White-Collar Crime

has demonstrated that criminals have an uncanny ability to adapt to a changing environment; it has also demonstrated a lack of ability by our police, prosecutors and judiciary to adapt with equal ease. There are many who fear the EFT revolution may give rise to a crime wave in the suites of our financial institutions.

EFT systems can best be described as an array of financial services that employ electronic impulses, generated and interpreted by computers, to debit and credit financial accounts. Each such debit or credit transaction is termed an electronic funds transfer. Among the better known EFT systems already in operation are the following:

• *Telephone Bill-Paying Systems:* A user, by simply punching a secret seven-digit number on a Touch-Tone phone, gains entry to his bank's computer. He then proceeds to give his account number and secret payment code and instructs the computer whom to pay and the sum to be paid.

• *Point-of-Sale Systems:* Found mostly in retail and supermarket chains, these systems are used for purchases, deposits, withdrawals and account verifications.

• *Automated Clearinghouses:* Operations in these computerized, interbank transfer systems commence with a computerized list of payment orders from one or more payers. On the list are recorded the names and account numbers of the payees, their banks and the amount to be paid each. The payer's bank then transmits the list, through a computerized system, to its automated clearinghouse, and the latter directs payment to the appropriate receiving bank.

• *Automated Teller Machines:* These perform a variety of financial tasks: They can accept deposits, provide withdrawals and transfer funds between accounts for bank customers.

• *Society for Worldwide Interbank Financial Telecommunications:* This international EFT system links more than 500 member institutions and handles more than 100,000 daily financial transactions.

Crime Problem

EFT represents an annual market in excess of $100 billion for the computer and telecommunications industries. These technologies have been propelled by powerful economic forces. Their growth has been by design. However, the architects of the cashless society have neglected to address the ability of the present criminal justice system to deter EFT-related crimes.

White-collar crime has constituted a serious problem for our society for many years. White-collar criminals bilk businesses and consumers alike out of more than $40 billion annually. These losses do not include the $50 billion lost to organized crime each year.

Law enforcement's track record in the investigation and prosecution of white-collar crimes has been, at best, mediocre. For example, fewer than 5% of all securities-related frauds ever reach the doors of prosecutors. An even smaller number ever result in convictions. Law enforcement experts fear that EFT may both facilitate and give rise to new forms of white-collar crime, making their investigation and prosecution even more difficult. Computer-related crimes account for losses in excess of $100 million annually (see figure), and few computer felons ever see the inside of a prison.

EFT systems also face the threat of organized crime. The "syndicate" is already active in the lucrative white-collar crime area. Organized crime has both the resources and know-how to attack EFT. For example, the net worth of organized crime is said to be in excess of $100 billion; its untaxed profits alone are said to exceed $500,000 per hour. In a single midwestern city, organized crime is said to control several dozen companies with total assets in excess of $800 million and an annual income of more than $500 million.

One syndicate family alone is said to control real estate interests valued at more than $200 million; another family is said to dominate a bank with assets in excess of $70 million. To close our eyes to the threat of organized crime could prove both foolish and dangerous.

Some police officials fear that not only will EFT pose a lucrative target for organized crime, but it may also become a vehicle for gambling, loansharking, laundering, narcotics and other illicit operations. In a society where money takes the form of electronic blips, law enforcement will find it difficult to keep track of organized crime operations.

New Forms of Crime

A computer consultant reportedly robbed a California bank to the tune of $10 million in a simple EFT-related fraud. An officer for a large financial institution allegedly played a key role in an EFT fraud that cost his employer more than $20 million. An employee for a federal agency programmed her employer's computer to issue more than $1 million to "ghost beneficiaries." If the present serves as a yardstick for the future,

OEM EUROPE MEETS AT THE INVITATIONAL COMPUTER CONFERENCES

In London, Stockholm, and Frankfurt in March, OEM decision makers will meet the industry's top computer and peripheral manufacturers at the Invitational Computer Conferences—the only seminar/displays designed specifically for the unique requirements of the quantity user.

Invitational Computer Conference Spring 1982 Series

London	March 11, 1982
Stockholm	March 18, 1982
Frankfurt	March 23, 1982

At these one day, regional conferences guests will have a close-up view of every type of computer and peripheral-mini/micros, disk drives, tape drives, printers, interfaces, controllers, graphic display terminals—and will be welcome to attend a program of technical seminars covering the latest state-of-the-art technology. Some of the companies associated with the series include Arsycom BV, Century Data Systems, CII Honeywell-Bull, Cipher Data Products, Control Data, Dataram, Genisco Computers, International Memories, MDB Systems, Priam, Printronix, Remex, National Semiconductor, Kennedy and Trilog.

Technical product seminars will be presented on streaming tape drives, graphic display systems, winchester disks, matrix line printers, color printer/plotters and add-in memories.

Plan to attend the conference in your area. Invitations are available from participating companies or from the ICC sponsor. For further information contact:

B.J. Johnson & Associates, Inc.
2503 Eastbluff Drive
Newport Beach, CA 92660
Telephone: 714/644-6037
Telex: 678401 TAB IRIN

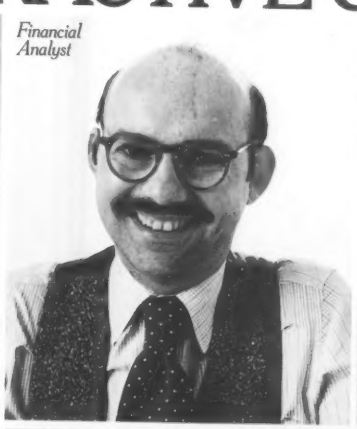
or

Tom Lewis
No. 10 Barley Mow Passage
Chiswich, London W4 4PH
England
Telephone: 01-994-6477 Ext. 239
Telex: No.: 8811418 Ref T100N

Invitational Computer Conferences

FINALLY, AN OFFICE AUTOMATION SYSTEM THAT INTERFACES PERFECTLY WITH THESE MULTIFUNCTIONAL INTERACTIVE UNITS.

President


Financial Analyst

V.P., Human Resources

Plant Manager

Secretary

Manager, Information Services

DATA GENERAL ANNOUNCES THE MOST COMPREHENSIVE, AND COMPREHENSIBLE, OFFICE SYSTEM EVER: THE CEO SYSTEM.

In November 1981, Data General entered the office automation industry—and at the same time, gave it a new standard.

Not just because of the comprehensiveness of its system—although it is the most comprehensive yet offered—but because of the way its elements have been integrated together.

The CEO™ Comprehensive Electronic Office system is the first system designed from the ground up to perfectly emulate the environment in which it will be used: the contemporary office.

THE SIX KEY ELEMENTS OF INFORMATION MANAGEMENT.

All offices create, revise, communicate, store, retrieve and use information in all its forms to make decisions. CEO has taken these processes, enhanced them and integrated them with Data General's data processing and communication capabilities.

The result is an easy-to-use system that works the way offices work—in all of its six basic information management functions.

CEO WORD PROCESSING incorporates all standard word processing functions, from simple editing to global search and replace. A special view mode lets users preview documents on the display in the format in which they'll be printed. It offers annotation and index functions, and a unique placemark feature that lets users mark places in a document for future reference. There's also an optional 75,000-word spelling verification facility.

CEO ELECTRONIC MAIL lets users create and distribute messages locally or remotely. Users can identify themselves by name, title, or any alias chosen. "Memorial" aliases are maintained to identify employees who are no longer on the system. And "E" mail includes features like certification that mail has been received by the intended party and provisions for urgency through a blinker on the display message counter.

CEO ELECTRONIC FILING files the way you file. Each document has a folder. Each folder has a drawer. Each drawer has a cabinet. (And there's an unlimited number of each.) To locate a document there's a multi-level search facility that classifies contents by subject, date, name or other predefined keywords. And there's even a customizable electronic janitor to empty the electronic wastebasket.

CEO ADMINISTRATIVE SUPPORT lets users maintain their own calendars electronically. It schedules meetings, those involving both personal and company resources (e.g., scheduling conference rooms or the company jet). It also lets you take phone messages on the screen in the familiar "While You Were Out" slips you now use, and performs other administrative functions.

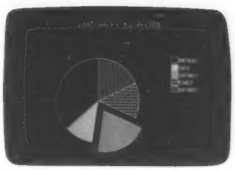
CEO DECISION SUPPORT combines Data General graphics and PRESENT™ software. Through PRESENT, managers and professionals can use non-procedural commands to request information from a DG/DBMS database. The PRESENT facility has relational-like capabilities that let users select, project and join information in databases to perform queries not considered when the database was initially designed. It provides the user with computing, interactive query, report writing and comprehensive office graphics capability.

INTEGRATED DDP. The CEO system is compatible with ECLIPSE® 16-bit and 32-bit information systems. It is also fully integrated with Data General's AOS and AOS/VS operating systems. In fact, all of our powerful DDP products —including application-transparent X.25 Networking, IBM SNA-compatible communications, local area networking, CODASYL-compliant DG/DBMS, and the four most popular ANSI-standard languages—can work in conjunction with CEO systems.

A SYSTEM THAT WORKS THE WAY OFFICE WORKERS WORK.

CEO also offers an exclusive "Interrupt" feature that lets users put a given job on hold, attend to something else and then return to it without disruption. A "Help" button provides users with simple operating assistance when needed. CEO may be customized to fit

the existing structures and practices of your company—by individual, department, or the entire organization. And the Comprehensive Electronic Office has ample provisions for system security, allowing you to restrict access to the system to those whom you designate.



In other words, the CEO system has taken the basic office process and emulated, enhanced and integrated it with our distributed data processing capability. The result is a system perfectly congruent with existing office structures—and easily accessible to executives, managers, professionals and support personnel.

AN OFFICE OF THE FUTURE THAT ISN'T PREMATURE.

CEO has a distinct advantage over many previously announced Office of the Future offerings:

It exists.

CEO is a system designed from the ground up—one that's ready for delivery now. Hardware, software, international service and support are already in place. Which is always reassuring to know before you write any computer company's name on an RFP letter.

But most important, CEO is a product of literally years of research resulting in the improbable:

A system that makes the difficult adjustment to human beings, instead of the other way around.

If you're interested in more information on office automation, we'd be happy to supply you with further details. Just write to "CEO" 7, Data General, 4400 Computer Drive, Westboro, Massachusetts 01580.

Data General

WE ENGINEERED THE ANXIETY OUT OF COMPUTERS.

THE DATA GENERAL GLOBAL OFFICE NETWORK

NORTH AMERICA

UNITED STATES:

HEADQUARTERS:
Westboro, Massachusetts

AL: Birmingham
AR: Little Rock
AZ: Phoenix
Tucson
CA: El Segundo
Fresno
Los Angeles
Oakland
Palo Alto
Riverside
Sacramento
San Diego
San Francisco
Santa Ana
Santa Barbara
Van Nuys
CO: Colorado Springs
Denver
CT: North Branford
Norwalk
FL: Ft. Lauderdale
Orlando
Tampa
GA: Norcross
IA: Bettendorf
Des Moines
ID: Boise
IL: Arlington Heights
Champaign
Chicago
Rockford
Peoria
IN: Indianapolis
KY: Louisville
LA: Baton Rouge
Metairie
MA: Cambridge
Wellesley
West Springfield
Worcester
MD: Baltimore
ME: Portland
MI: Grand Rapids
Southfield
MN: Richfield
MO: Creve Coeur
Kansas City
MS: Jackson
MT: Billings
NC: Charlotte
Greensboro
Greenville
Raleigh
NE: Omaha
NH: Bedford
NJ: Cherry Hill
Somerset
Wayne
NM: Albuquerque
NV: Reno
NY: Buffalo
Lake Success
Latham
Liverpool
Melville
New York City
Rochester
White Plains
OH: Brooklyn Heights
Cincinnati
Columbus
Dayton
OK: Oklahoma City
Tulsa
OR: Lake Oswego
PA: Blue Bell
Lancaster
Philadelphia
Pittsburgh
RI: Providence
SC: Columbia
TN: Knoxville
Memphis
Nashville
TX: Austin
Dallas
El Paso
Ft. Worth
Houston
San Antonio
UT: Salt Lake City
VA: McLean
Norfolk
Richmond
Salem
WA: Bellevue
Richland
Spokane
WI: Brookfield
Grand Chute
Madison
WV: Charleston
PUERTO RICO:
Hato Rey
CANADA:
ALBERTA:
Calgary
Edmonton
BRITISH COLUMBIA:
Vancouver
MANITOBA:
Winnipeg
NOVA SCOTIA:
Halifax
ONTARIO:
Mississauga
Ottawa
QUEBEC:
Montreal
MEXICO:
Mexico City
Monterrey

CENTRAL AMERICA

COSTA RICA:
San José
GUATEMALA:
Guatemala City

SOUTH AMERICA

ARGENTINA:
Buenos Aires
BOLIVIA:
La Paz
BRAZIL:
São Paulo
CHILE:
Santiago
COLUMBIA:
Bogotá
ECUADOR:
Quito
PARAGUAY:
Asunción
PERU:
Lima
URUGUAY:
Montevideo
VENEZUELA:
Maracaibo

EUROPE

HEADQUARTERS:
Paris, France
AUSTRIA:
Vienna
BELGIUM:
Brussels
DENMARK:
Copenhagen
FINLAND/USSR:
Espoo
FRANCE:
Le Plessis-Robinson
Lille
Lyon
Nantes
Saint-Denis
Strasbourg
GERMANY:
Düsseldorf
Frankfurt
Hamburg
Hannover
Munich
Nuremburg
Stuttgart
IRELAND:
Dublin
ITALY:
Bologna
Florence
Milan
Padua
Rome
Turin
NETHERLANDS:
Amsterdam
Rijswijk
NEW ZEALAND:
Auckland
Wellington
NORWAY:
Oslo
PORTUGAL:
Lisbon
SPAIN:
Barcelona
Bilbao
Madrid
SWEDEN:
Gothenburg
Malmo
Stockholm
SWITZERLAND:
Lausanne
Zurich
UNITED KINGDOM:
Birmingham
Bristol
Glasgow
Hounslow
London
Manchester

MIDDLE EAST

EGYPT:
Cairo
ISRAEL:
Tel Aviv
JORDAN:
Amman
KUWAIT:
Kuwait
LEBANON:
Beirut
MOROCCO:
Casablanca
SAUDI ARABIA:
Jeddah
Riyadh

AFRICA

NIGERIA:
Ibadan
Lagos
SOUTH AFRICA:
Cape Town
Durban
Johannesburg
Pretoria

ASIA

HONG KONG
INDIA:
Bombay
INDONESIA:
Jakarta Pusat
JAPAN:
Fukuoka
Hiroshima
Nagoya
Osaka
Tokyo
Tsukuba
KOREA:
Seoul
MALAYSIA:
Kuala Lumpur
PHILIPPINES:
Manila
SINGAPORE
TAIWAN:
Taipei
THAILAND:
Bangkok
TURKEY:
Ankara

AUSTRALIA

Adelaide
Brisbane
Hobart
Melbourne
Newcastle
Perth
Sydney

Data General
WE ENGINEERED THE ANXIETY OUT OF COMPUTERS.

©1981 Data General Corporation. ECLIPSE is a registered trademark and CEO and PRESENT are trademarks of Data General Corporation.

we can safely conclude that the cashless society faces serious criminal attacks.

EFT-related crime can take one or more of the following forms:

- Corporate or politically motivated sabotage.
- Unauthorized use.
- Misuse of confidential business data.
- Diversion of valuable property.
- An array of economic crimes, such as making payments to ghost employees or phony companies, embezzlement, wire frauds, kickback schemes and others.

EFT systems may also become the targets of electronic attacks. These can take the form of:

- *Spoofing:* The perpetrator exploits the inability of a system's remote terminal users to establish at any given time that they are communicating with the right system, rather than a masquerading system.
- *Trojan Horse:* The felon introduces into the computing system a program containing a hidden mechanism (trapdoor) for collecting, falsifying or destroying data.
- *Insider Code Manipulation:* A dishonest programmer inserts a code into the system that would form trapdoors, which are then activated at designated times.
- *Masquerading:* An individual gains unauthorized access to a system component by assuming the identity of an authorized user. It may take the form of wiretapping an authorized user's terminal and intercepting his identifiers.

The needed technical know-how and tools to subvert EFT systems are readily available. Criminals have access to both. The question we should ask ourselves is whether our police, prosecutors, judges and others within the criminal justice system have likewise kept abreast of these technological changes. Some observers fear they have not.

Policing Cashless America

Our present police forces are the outgrowth of 19th century criminology. By training and philosophy, their orientation is the area of "street crime." Until very recently, few of our police agencies concentrated their efforts on white-collar crime. Victims of such crimes were left to fend for themselves.

However, not only are our police forces ill-trained and ill-equipped to address white-collar crimes, but they are often small and highly fragmented because of the constraints of our federal system. There are more than 40,000 police agencies in America; the average department employs less than 20 full-time employees. A study of 1,597 local police departments found that only 7% of these had more than 100 employees, 38% had between 10 and 99 employees and 55% had fewer than 10 employees.

One presidential commission has observed that, "America is . . . a nation of small police forces, each operating independently within the limits of its jurisdiction."

In part, this highly fragmented structure explains why local police forces have proven ill-equipped to investigate white-collar crimes. Lacking in resources, manpower and jurisdiction, they have proven inadequately equipped to address sophisticated, often interstate, crimes. Questions are now also being raised as to the ability of these small police agencies to deter EFT criminals.

At the federal level, we have more than 500 agencies, many of which enjoy some form of police or regulatory powers. Many have been assigned the responsibility of policing specific areas of the economy. For example, the Inspector General's Office at the U.S. Department of Agriculture (USDA) is authorized to investigate only violations of USDA rules, regulations and statutes. The Customs Service is charged with administering the Tariff Act of 1930, as well as an array of other related statutes. Outside this sphere, it lacks jurisdiction.

The closest thing we have to a national police force is the Federal Bureau of Investigation. However, its jurisdiction is limited; it is not as broad as portrayed by the popular media. When a violation of law falls within the jurisdiction of a sister agency, the FBI will usually defer.

The federal police agencies, however, have also not fared well in the area of white-collar crime. Although better armed than their local counterparts, they are permeated with layers of red tape; these stifle innovative policies and training. For example, no federal police agency, except for the FBI and the U.S. Secret Service, has a training program for its agents in the areas of computer/EFT crimes.

In addition, our police forces are overburdened by traditional crimes, and it is a losing battle. On the average, only 19% of the serious crimes reported result in any arrests. In Baltimore County, Md., for example, there were more than 39,000 property crimes last year; the majority remain unresolved. Highly decentralized, fragmented and stifled by outdated police strategies, our local and federal police forces are both ill-trained and poorly equipped to deter EFT criminals.

Meet the Prosecutors

America's prosecutors fall into one of two classes: local or federal. At the local level, the prosecutorial machinery takes on many forms; for example, there are district attorneys, state attorneys, county attorneys, attorney generals and so forth.

Local prosecutors enjoy only intrastate jurisdiction. Like the local police forces, they too suffer from outdated policies, lack of resources and little or no training in the area of white-collar crime (including EFT). A review of the local prosecutorial annual budgets will disclose that few are in excess of $1 million. When one considers that a complex EFT fraud can easily cost $100,000 to investigate and prosecute, these budgetary problems become more meaningful. To these monetary constraints, one should also add limited manpower.

In addition, local prosecutors enjoy only intrastate jurisdiction. Since many EFT-related crimes can involve interstate or foreign commerce, they may find it difficult to reach all the culprits. Further, local prosecutors are presently under pressure to prosecute street crime. The voting public cares little about the theft of data. Cooperation between local prosecutors is often a myth; political and personal rivalries make this difficult. EFT crimes, however, will require a degree of cooperation and coordination that local prosecutors have not displayed in the past.

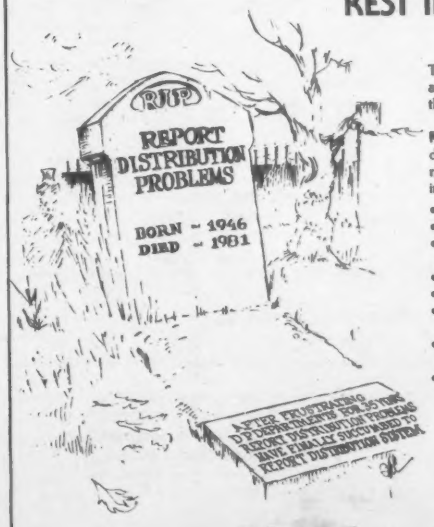
Federal Responsibility

At the federal level, the U.S. Department of Justice and its panoply of divisions, branches, bureaus and the U.S. Attorney Offices are responsible for prosecuting federal crimes. White-collar crimes at Justice have traditionally been the province of the Criminal Division and the U.S. Attorney Offices. However, since the division acts more as a clearinghouse, prosecutions are left mostly in the hands of the U.S. Attorney Offices.

There are some 94 U.S. Attorney Offices, employing a little more than 2,000 attorneys. The larger offices are located in the District of Columbia, Southern District of New York, Central District of California and Northern District of Illinois. The largest of these offices employs about 160 attorneys, while the smallest employs fewer than 10. The smaller offices rarely handle complex white-collar criminal prosecutions, nor do they have the requisite expertise to do so.

The larger U.S. Attorney Offices have fraud units. These specialized units handle the bulk of the federal white-collar criminal prosecutions. However, the fraud units are manned by small staffs; their combined staffs number no more than

REST IN PEACE


RIP
REPORT DISTRIBUTION PROBLEMS
BORN ~ 1946
DIED ~ 1981
AFTER FRUSTRATING DP DEPARTMENTS FOR DECADES, REPORT DISTRIBUTION TROUBLES HAVE FINALLY SUCCUMBED TO REPORT DISTRIBUTION SYSTEM.

The REPORT DISTRIBUTION SYSTEM (RDS) addresses and solves a problem as old as data processing. Namely, how to insure that Report Data is processed and distributed correctly.

RDS retrieves report data residing in the Spool queue and consolidates report segment's by end user. This results in a dramatic reduction in the distribution workload and error rate. Other features include:

- •No application program or system changes required.
- •Control record driven.
- •"BROADCAST" capability permits report data to be routed to multiple end users.
- •Optional job separators by end users.
- •Copy count variation by report/end user reduces paper costs.
- •RJE split capability permits end user data to be consolidated and routed to a specific RJE station.
- •MANIFEST provides Report control and chargeback billing information.
- •RDS operates under DOS/VS, DOS/VSE, or OS/MVS.

Put Report Distribution Problems

to rest in your organization.

Mantissa Corporation

244 Goodwin Crest Drive • Suite 200 • Birmingham, AL 35209 • (205) 945-8930

IN DEPTH

200 attorneys. Unless Justice changes its strategy in the white-collar crime areas, it is this small core of prosecutors that would be called upon to handle all complex EFT-related federal prosecutions. The proliferation and complexity of EFT crimes, however, could easily tax their small numbers. Quality would be overwhelmed by quantity.

The Department of Justice's problem is further complicated by the in-house rivalry between its Criminal Division and the U.S. Attorney Offices. The latter guard their "turf" from encroachments by the division's attorneys.

Today's prosecutorial apparatus, like the police agencies, finds itself hampered by a lack of resources and training, political in-fighting and the requisite strategy to address cashless crimes. Prosecutors are also creatures of habit; they are the serfs of outmoded rules and procedures. These variables make for an equation that is not responsive to change.

In a cashless society, paper is replaced by electronic blips. Computers replace filing cabinets; disks replace ledger sheets. Prosecutors will have to rely largely on the adequacy of computer-generated evidence. However, some jurists question the adequacy of our evidentiary rules and procedures to meet the needs of a cashless society. The rules that govern present litigation were specifically designed for a paper-based society. The legal establishment has proven slow to embrace change.

Our legal system is steeped in tradition, symbolism and precedent; many of the rules and procedures that govern the "game" are rooted in feudal England. One of the oldest of our present evidentiary rules is the shop-book rule. It has roots in 18th century agrarian England, a society where regular business entries were made on paper. The shop-book rule has survived into the present; many of the states have adopted a modified version.

Basically, under this common-law rule (and many of its modern versions), a business record will be admitted into evidence only if it is deemed to be reliable. To ensure its reliability, the courts require that it meet the following test:

- That it be made routinely in the course of business.
- That the entry be contemporaneous or made within a short period of time of the transaction recorded.
- That it be made by an individual who is no longer available to testify.
- That the individual had personal knowledge of the event he recorded.
- That the individual had no motive to misrepresent or misstate the facts he recorded.

The present Federal Rules of Evidence have relaxed this rule and provide for the admission of computer printouts. However, it must first be demonstrated that the record was:

- Made at or near the time of the event.
- In the regular course of business.

EFT-generated business records, however, may fail to pass both of the above evidentiary tests (especially the shop-book rule). The admission of computer-generated evidence may be challenged by a defendant on the grounds that it was not made routinely, entered contemporaneously or prepared by a person who had personal knowledge of the events he recorded.

A defendant can also attack the "reliability and trustworthiness" of the computer-generated evidence by demonstrating that computerized records can be easily manipulated or altered, deleted and fabricated.

Changing Attitude

A growing minority of courts, however, both at the state and federal levels, have started to relax the rules regarding the admission of computer-generated evidence. For example, the Fifth Circuit Court has found no merit in a defendant's contention that computer printouts are unreliable. The Ninth Circuit Court has held that computer printouts are admissible under the Federal Rules of Evidence. A number of other courts, both federal and state, have taken similar positions.

However, these decisions constitute only a minority position. In addition, the present cases have dealt only with computer printouts. They have

10 reasons why...the new Moore Computer Supplies Catalog is the only one you'll ever need!

1. Now, you can buy the best, top-quality computer and word processing supplies from Moore—serving business for 100 years.

2. Moore offers you a large selection of leading brand name supplies. High-performance products for today and tomorrow that have passed rigorous examination by our team of Product Specialists.

3. Low prices. Our skilled buyers are in touch with market trends, worldwide, and use Moore's buying power to bring you real savings.

4. All prices guaranteed to August 31, 1982, regardless of inflation.

5. We move fast. Our standard practice is to process and ship every order within 24 hours from one of Moore's four regional warehouses.

6. You save money and time. All products stocked in our own warehouses. No middlemen. No hassles. And, no delays.

7. Emergency overnight delivery when you need supplies NOW.

8. It's easy to order by mail. Or, call us toll-free any business day, 8 a.m.—5 p.m. (your time anywhere in the continental U.S.) for fastest delivery.

9. The *only toll-free technical assistance line* in the industry. Practical, professional help is always as close as your telephone. Another free service from Moore.

10. Moore guarantees your 100% satisfaction, no strings attached. Every product is backed by our no nonsense, unconditional written guarantee.

To get your free copy of The Moore Computer Supplies Catalog, call us toll-free, 800-323-6230*, ext. 100, or fill in and mail the coupon below.

Call toll-free TODAY! 800-323-6230, ext. 100

*In Illinois, call 312-459-0210, ext. 100. *In Alaska and Hawaii, 800-323-4185, ext. 100.

Send for your **FREE** catalog today!

Complete and mail this coupon or call the toll-free number above.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip Code _____

MOORE Catalog Group MOORE BUSINESS CENTER

A Division of Moore Business Forms

Moore Computer Supplies Catalog
Dept. 100
P.O. Box 20
Wheeling, IL 60090

© 1982 Moore Business Forms, Inc.

IN DEPTH

not addressed the admissibility of records stored on magnetic tapes or disks, nor have they eliminated the personal knowledge requirement in a completely automated system. The courts have as yet to address the question of whether the admission of computer-generated evidence violates the confrontation and due process clauses of the Constitution. Prosecuting complex EFT-related crimes can prove to be an uphill fight, given the present rules of the game.

Are New Laws Needed?

Deterrence, by necessity, must rely on state and federal criminal statutes. The present legal arsenal, however, is said to be ill-equipped to address cashless crimes. For example, some of the more potent prosecutorial tools may prove of little value:

- *Mail fraud statutes:* Effective in a paper-based system, but may prove of little or no value in a cashless society (especially with the advent of electronic message systems).
- *Larceny and embezzlement:* Electronic blips are not viewed as property by the more conservative courts.
- *Wire fraud:* Effective only if the criminal makes use of the wires in interstate or foreign commerce.
- *Banking fraud statutes:* Cover only bank insiders.
- *Title III of the Omnibus Crime Control Act:* Safeguards only the privacy of oral communications.
- *Electronic Funds Transfer Act:* Comes into play only when a debit instrument is employed.

Our criminal laws were not designed for a cashless society.

In an effort to address the need for prosecuting computer-related crimes, U.S. Rep. Bill Nelson (D-Fla.) introduced last June the Federal Computer Systems Protection Act of 1981 (H.R. 3970). This bill is modeled after the Ribicoff bill (S. 240); the latter died in the 96th Congress.

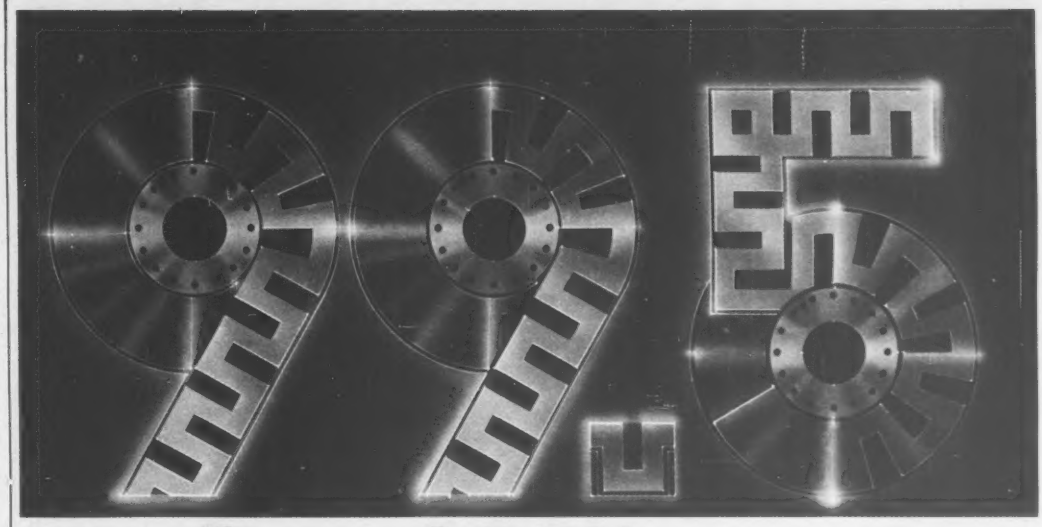
H.R. 3970 would make it a crime to employ, for fraudulent or other illegal purposes, any computer which:

- Is owned or operated by the federal government.
- Is owned or operated by a federally insured financial institution.
- Affects interstate commerce.

Anyone convicted under H.R. 3970 could face up to $50,000 in fines; twice the amount illegally gained, depending on whichever is higher; and/or up to five years in prison.

H.R. 3970 defines a computer as any device that performs logical, arithmetic and storage functions by electronic manipulation and includes any property and communications facility directly related to or operating in conjunction with such a device. The bill excludes electronic typewriters, calculators and home computers from its jurisdiction and leaves the prosecution of these in the states.

H.R. 3970, however, like S. 240, has its critics. They charge that the bill is too broad, infringes on states' rights and would make game playing a crime. H.R. 3970 presently lies dormant in the House Judiciary Committee.



Data 99.5% pure.

Now digital data communication of guaranteed accuracy and unprecedented reliability is available in more than 350 cities.

It is DATAPHONE® Digital Service, a major development of the Bell network, the world's largest and most advanced information management system.

With DATAPHONE Digital Service, your data system handles more data, clean data, day in and day out. Bell guarantees better than 99.5% error-free seconds transmitting at 56,000 bps and even greater accuracy at slower rates. Reliability is designed in. If needed, troubleshooting and service are handled quickly by the Bell System from a central location. You get more use from your system without adding costly hardware.

When your system is digital from end to end, there are no losses of quality due to signal conversion or amplification. Re-transmission is virtually eliminated.

You'll find that when your data system is more efficient, accurate and reliable, you can respond faster, serve your customers and users better, manage better.

Discuss with Bell how DATAPHONE Digital Service can serve your needs. All you have to do is call toll free 1-800-821-2121. In Missouri, call 1-800-892-2121. 1-800-821-2121

Put our knowledge to work for your business. Bell System.

The knowledge business

IN DEPTH

Another bill that could affect EFT-related crimes is S. 1394. This bill was introduced by Sen. DeConcini (D-Ariz.) last June. Section 4 of S. 1394 would authorize the U.S. Secret Service to investigate and make arrests in any fraud committed against the federal government, any entity insured by the federal government or a government corporation and against any fraud which involves or relates to any electronic funds transfer.

Presently, S. 1394 lies dormant in the Senate Judiciary Committee. Both bills, if enacted, could prove of assistance to federal prosecutors.

Once an EFT criminal is convicted and sentenced, the burden would fall on the penal system to rehabilitate him.

Critics, however, charge that our penal system is bankrupt. If it has failed to reform present street criminals, how can we expect it to reform sophisticated EFT felons?

The critics also note that the vast majority of criminals are never apprehended anyway (and only four out of five criminal cases reach prosecution), so the penal system makes little or no difference in their lives.

A further criticism is that many offenders rob the correctional system of its vitality through endless court appeals. In addition, 40% to 70% are committed again, thus attesting to the system's failure.

The cashless society is upon us; EFT-related crimes are on the increase. Their investigation and prosecution can prove both difficult and costly. Our police, prosecutors and judiciary are ill-prepared and our penal system is inadequate and primitive.

Society may find itself at the mercy of the technocrat criminal. If left to its own designs, the legal profession will do little to reform the present quagmire. Pressure for change must come from the other professions.

LOWER DATA TRANSMISSION COSTS

Eliminate 75 percent or more of your phone lines with M/A-COM DCC's Stat Mux

With our CM9100 Statistical Multiplexer, 2 to 32 data lines (with speeds of up to 9.6 Kbps) are concentrated into 1 composite data link (with a speed up to 16 Kbps). CM9100 multiplexing typically reduces your data telephone line costs by as much as 75 percent or more.

Error-Free Messages

Our stat mux detects and corrects transmission-induced data errors transparently to your system. If input transmission becomes too demanding, the CM9100 regulates the rate of incoming data by one of several methods that you select for each port at each end of the link. Improved performance is obtained by the mux's extensive memory which can provide up to 32 KBytes of buffering.

Modems

- Integral 9,600 bps and 4,800 bps
- CCITT compatible
- Automatically adjusts to line conditions
- Comprehensive link diagnostics

Compatibility

- No system hardware or software changes required
- Handles both async and bisync data
- RS232C Interface
- UL listed

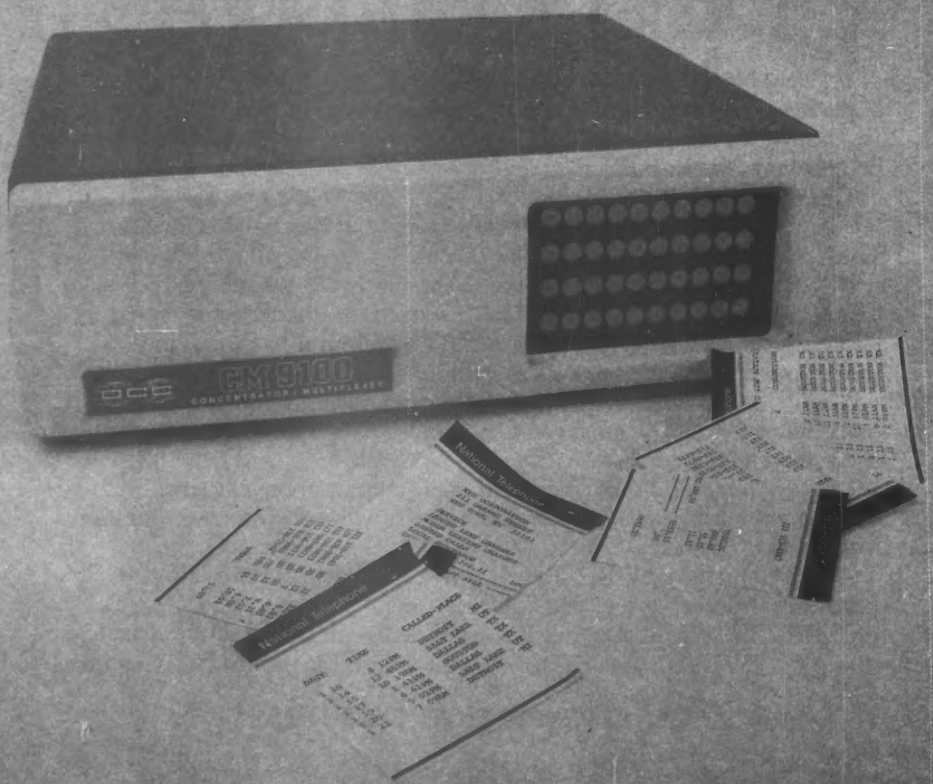
Affordable Quality

We're the company who introduced packet-switching equipment to the U.S. on a large scale. And because of our experience, we can offer the best to you at an affordable price.

Contact us at the DataCom Products Division for more information on how statistical multiplexing with our CM9100 can save you money. Telephone (301) 428-5600 or TWX (710) 828-0541. Write 11717 Exploration Lane, Germantown, MD, 20874.

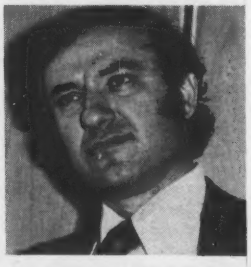
MACOM

Leading the Way in Data Communications Technology



See Us At The Federal DP Expo, Feb. 22-24, Washington, D.C., Booth #153.

About the Author



August Bequai is a Washington, D.C.-based attorney with Reed, Bequai, Ross and Burger. He specializes in the area of law and technology.

Bequai formerly served as chairman of the Federal Bar Association's Subcommittee on White-Collar Crime and as vice-chairman of the Washington, D.C., Bar Committee on Regulatory Agencies. He has lectured widely before professional and business groups and is the author of four books and more than 30 articles. His latest book, Cashless Society — EFTS at the Crossroads, *was published by John Wiley & Sons in 1981.*

Bequai is also an adjunct professor at the American University. He holds degrees from New York University, George Washington University and the American University.‡

application systems development methodologies

by denis a. connor

COMPUTERS AFFECT ALMOST EVERY WALK OF LIFE. You can walk into a store and buy a computer to take home and use immediately — either with purchased software, programs using macro languages or application generator packages. Therefore, it is an incredible contradiction that most DP organizations that have been using large computers since the 1950s or 1960s find they cannot deliver an application system that completely meets the user's requirements, is on time and within the approved budget.

To understand this problem better, one must recall the history of computer systems design. When computers first appeared in the early '50s, they were simple improvements on the old tabulating machines that were programmed by connecting myriads of wires on boards. The next stage involved writing code that amounted to a series of zeros and ones, the language of switching within the computer. The early machines and programming languages evolved into tape- and disk-driven machines and languages such as assembler, Cobol and PL/I.

During this evolution, application systems were designed and implemented on the basis of programmers (coders) communicating on a one-to-one basis with the system user. Since most of these systems were for accounting and since the programmers were most often company people who had drifted into DP, the resulting systems were highly satisfactory in terms of the user's requirements and were simple, stable and reliable.

However, this happy state of affairs, like many a marriage after a few years, began to fall apart. First, the extremely rapid increase in computer processing speed and storage capacity, combined with an inversely proportionate reduction in hardware costs, made increased use of the computer, particularly as a high-volume, high-speed processor, almost a necessity.

As hardware manufacturers started producing effective software and as users gained interactive access to computers, users began to demand systems that were extremely complex in their design and created difficulties in communicating requirements to the analysts and designers. Added to this was the advent of data base and data dictionaries, which emphasized the value of data as a corporate resource and the control of that data in terms of security, redundancy, consistency and compatibility.

Then the arrival and rapid spread of mini- and microcomputers, with their ability to be programmed and used almost overnight, added salt to the wounds of the unfortunate DP staff already under attack by frustrated users whose systems did not deliver what they wanted, if they were ever implemented as planned.

Fortunately, nature abhors a vacuum, and the cures for the woes of the systems designers, programmers and their management began to appear fast and furiously in the form of application systems development methodologies (ASDM). Most of these, if properly used, can solve or reduce many of the problems designers and programmers

---

Excerpted with permission from Application Systems Development Methodologies, *to be published in mid-1982 by Savant Institute, 2 New St., Carnforth, Lancashire, England LA5 9BX,* *Copyright ©1982 by Denis Connor.*

IN DEPTH

face. A short list of ASDMs and related solutions would include:

1. Structured techniques such as structured design, analysis and programming as defined by C. Bohm and G. Jacopini,[1] Ed Yourdon and Larry Constantine,[2] Tom DeMarco,[3] Chris Gane and Trish Sarson,[4] M.A. Jackson[5] and Ken Orr.[6,7]

2. Application systems methodology packages including Pride, from Milt Bryce and Associates, Inc., Cincinnati; SDM/70, from Atlantic Management Systems, Inc., Philadelphia; Spectrum, from J. Toellner and Associates, Los Angeles; Method 1, from Arthur Anderson and Co., Chicago; Stradis, from McDonnell Douglas Automation Co., St. Louis; Infomethod, from Information Methods, Waltham, Mass.; and others.

3. Application systems methodology textbooks, including *Developing Structured Systems* by Brian Dickinson (Yourdon Press, New York, 1981); *Systems Development Management* by Auerbach Publishers, Inc. (Pennsauken, N.J., 1981); and *Managing the Systems Development Process* by Charles L. Biggs, Evan G. Birks and William Atkins (Prentice-Hall, Englewood Cliffs, N.J., 1980).

4. Computerized project control systems, such as PAC II from International Systems, Inc. and PC 70 from Atlantic Management Systems, Inc. (both firms based in Philadelphia).

5. Systems design using application generators and user-friendly languages, as advocated by James Martin (*Application Development Without Programmers*, Savant Institute, Carnforth, UK, 1981); Richard Dalton (*Open Systems: Are Programmers Really Necessary?*, Open Systems, San Francisco, 1981); IBM ("Application Development Productivity" by Diana Davis, IBM, at Guide 51, August 1981) and the *EDP Analyzer*, May, June and September 1981 (published by Canning Publications, Inc., Vista, Calif.).

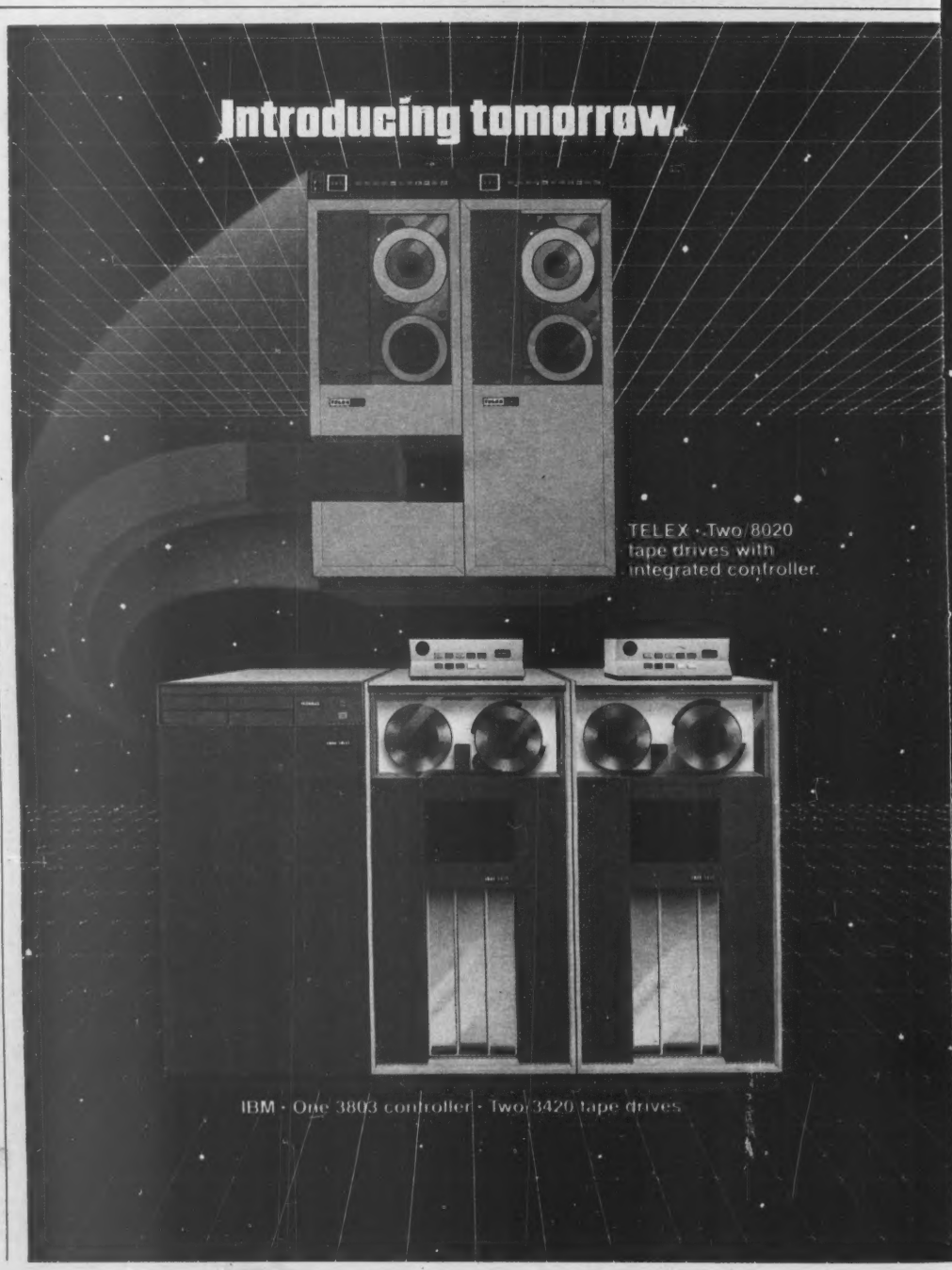
6. Corporate objectives with an emphasis on data and data relationships, as described by James Martin and Clive Finkelstein in *Information Engineering* and by James Martin in *Strategic Data Planning Methodologies* (both works published by Savant Institute, Carnforth, UK).

7. Distributed systems and networks, on which Martin has published several texts (*Corporate Strategy for Distributed Data Processing, Distributed File and Data Base Design, Computer Networks and Distributed Processing, Distributed Processing — Network Mechanisms, Standards and Recovery, Architectures for Distributed Processing* and *Distributed Processing Software and Network Strategy*, all published by Savant Institute, Carnforth, UK).

If a DP manager had access to all of the above (which is unlikely, since one computerized project control system can cost tens of thousands of dollars), he would have a difficult time choosing techniques and methodologies to meet individual organization and application systems needs. Associated with all of the above, there is a large education cost, which is measured not only in dollars spent on training but in lost labor costs, since educating an individual takes him away from a productive task. So data processing management, and in many cases corporate management, must thoroughly understand and define the particular problems they face and accordingly select and implement the cure of cures.

The unfortunate truth is that most often these problems are not properly defined. Instead, management grasps at straws or selects what appears to be the safest route under the circumstances. As a result, the real problems are not being solved and the end users whose application systems requirements are not being met become more and more frustrated.

When management finds itself in a corner, two of the most common solutions are the purchase of an application systems development methodology and a computerized project control system. Managers decide to take this course when they realize that systems design and development standards either do not exist in the organization or they are inadequate. A systematic phase-by-phase, task-by-task project planning and control mechanism with clearly identified deliverables at specific control points becomes necessary.


Introducing tomorrow.
TELEX - Two 8020 tape drives with integrated controller.
IBM - One 3803 controller - Two 3420 tape drives

DEVELOPMENT METHODOLOGIES

IN DEPTH

Computerized project management systems are generally purchased to simplify scheduling of resources and time, to provide a mechanism to juggle "what-if" situations and to provide budgetary control of time and dollars.

No sane person can argue with these goals, and management can now relax while everything falls into place and application systems development projects proceed on schedule, within budget and giving the user what he wants.

But sooner or later, with few exceptions, the balloon bursts and things start to go wrong. Often, there is no apparent rational explanation, although the reason frequently given is that these methodologies work well with small systems, but not with large complex systems. Most vendors can prove this to be untrue by referencing large organizations with complex systems who have succeeded. This article is not directed at the fortunate organizations and individuals that succeed, but at those who need help.

What Can Go Wrong?

One of the symptoms of trouble may arise when the project is almost finished. All the project controls were observed and all the necessary deliverables produced on time, but the last 5% of the project — before the user accepts the system and implementation — takes almost as long as the first 95%. The reasons for this are many and varied and can include a poor understanding of the user's requirements, unworkable organization of the system's functions, poor systems design, omission of critical system interfaces, inadequate programming techniques or poor testing at all levels.

Why did all this not surface much earlier in the project? The emphasis was placed on "deliverables," which have been clearly described in the methodology at the expense of the things that really matter. For example, phase X of the methodology may specify "an approved business specification" to be delivered. This could be 100 pages of narrative or a stack of diagrams that are approved by the user as he believes this reflects his requirements.

In reality, the analyst may have a different perspective from the user of the requirement but, in terms of the methodology, the task is completed and satisfactory because the user has approved it. Another example could be an unstructured systems design with poorly designed and packaged modules. Again, the task is completed on time, but the system falls apart when it is programmed and tested.

A second symptom is rejection of the methodology by the DP staff itself. Such a situation commonly arises when a large corporation or government organization decides at a senior corporate level to acquire a particular methodology and to legislate its use through several systems development groups, each of which is charged with its own systems development. Then each development group tries to do its own thing under

When tomorrow's tape subsystems are introduced they'll be half the size of today's.

Introducing tomorrow.

Introducing the Telex 8020-2X Magnetic Tape Subsystem with integrated controller. This remarkable 3420-compatible drive cuts space requirements by up to 50 percent.*

The Telex 8020-2X represents the latest in a long evolution of technology-driven solutions to real-world business needs.

It's the most energy efficient 6250 bpi tape subsystem available today. Like our popular 8020 Series, the Telex 8020-2X lets you realize significant savings in energy, operating and cooling costs—as much as 45 percent. It also costs substantially less than its 3420 counterpart.

But, best of all, it reduces computer room space requirements by up to 50 percent.

At Telex, the innovation continues.

How has Telex been able to achieve this breakthrough? Telex technological know-how has enabled us to totally integrate the separate freestanding controller normally required in GCR tape subsystems. Instead, we've included the controller right in the tape package itself. And the slim-line 8020-2X tape unit has all the capability of big oversized, overpowered long-column tape drives.

It offers a full range of densities—6250 bpi (GCR), 1600 bpi (PE), or 800 bpi (NRZI), with speeds up to 125 ips, and transfer rates up to 780 kb per second. And it's totally field upgradable.

Total 3803/3420 plug-compatibility.

IBM 360/370/4300 users will find the Telex 8020-2X an extremely cost-effective alternative to long-column drives.

It combines all the energy efficiency and price/performance value of our proven 6250 bpi tape subsystem family *(over 5,000 units delivered)* with the added benefit of tremendous space savings. Plus, you get patented Telex features like our energy-saving Supr-Lite™ Capstan, the gentle, tape-saving Telex Tape Path and much more.

For more about the new, ultra-compact Telex 8020-2X, call your Telex representative. Or phone John Hawkins in our Marketing Department in Tulsa at (800) 331-2623, toll free.

The compact Telex 8020-2X Tape Subsystem adds up to significant savings in energy and leasing costs.

DOLLAR SAVINGS

Telex 8020-2X Model 6 vs IBM 3420 Model 6 (savings based on 2-year lease).

CONFIGURATION	1x2	1x4	1x6	1x8
POWER	$ 1,958	$ 3,002	$ 4,046	$ 5,090
AIR CONDITIONING	$ 2,238	$ 3,366	$ 4,494	$ 5,622
LEASE	$12,535	$21,224	$29,912	$38,600
TOTAL	$16,731	$27,592	$38,452	$49,312

NOTE: Figures are based on published vendor specifications and prices. IBM pricing is estimated at a 7% increase in the last year of the lease. Telex is a 2-year fixed lease. Power consumption is conservatively estimated at 5¢/kwh at a 12-hour-per-day tape drive operation.

*50 percent space reduction is based on a 1x2 configuration of the Telex 8020-2X with embedded controller, versus a 1x2 IBM 3803/3420.

Telex Computer Products, Inc.
Terminals/Peripherals/Systems/
OEM Products 6422 East 41st •
Tulsa, Oklahoma • 74135 • (918) 627-1111

The innovation continues... TELEX.

DEC 11 USERS

CONVERT UNIBUS TO Q-BUS

DW 11-BF

$295

(CASH-WITH-ORDER PRICE)

Converts unibus peripherals to Q-bus. Includes M8217 quad interface board, M9403 bus mirror image with 15V to 12V regulator, DDV11-CF backplane, TEV11 bus terminator.

NEW IN ORIGINAL CARTON
3-DAY RETURN PRIVILEGE

Call Patti French, Extension 202

S122CWC

NEWMAN COMPUTER EXCHANGE
1250 N. Main P.O. Box 8610 Ann Arbor MI 48107
(313) 994-3200

ADAPT Member Computer Dealers & Lessors Association

IN DEPTH

the umbrella of the methodology. So, in name the methodology is followed, but in fact it is not.

A third symptom is the inability to proceed at some point in the middle of the project. For example, let us assume the "business specification" is to be a "logical data flow diagram" displaying the user's requirements, supported by a complete data dictionary and "mini specifications" of the "lowest level bubbles" in the data flow diagram. Let us also assume that both analysts and users have a thorough understanding of structured analysis as described by Tom DeMarco.[3] The analysts and users can become so completely involved in the specification process that they constantly uncover new facets of the requirement. This immediately has a ripple effect and the process goes on with no end in sight.

To get to the heart of this problem, it is first necessary to identify the different categories of people involved in systems design, development and implementation; systems operations; and systems maintenance and enhancement. Second, one must identify each group's needs and how these needs affect the systems methodology.

Who's Who

The people involved can be grouped under the following headings:

- *Senior corporate management*, responsible for defining corporate objectives, company policy and the company's purse strings.
- *Functional user management*, responsible for meeting corporate objectives, implementing company policy and, in general, getting the job done so the company can stay in business.
- *User workers*, the people who actually do the work as directed by functional user management.
- *Systems or DP line management*, responsible for designing, building, implementing, operating and maintaining computer systems to meet the needs of senior corporate management and functional user management.
- *Systems project management*, responsible for planning, scheduling and controlling all projects associated with systems development and maintenance. (The term "development" is used here in a global sense and includes design, development and implementation).
- *Systems project staff*, including every individual employed in a systems development project, regardless of his functional responsibilities. This group could include systems analysts and designers, programmers, testers, data base and data administration staff and hardware and software technical experts.
- *DP operations staff*, including all those involved in providing users (whoever needs the system) with the information they require when they require it. This encompasses control over such things as user reports, checks, interactive terminals and so on.
- *Systems maintenance and enhancement staff*, responsible for all systems maintenance (debugging) and enhancement. This group is similar to the systems project staff, as it can encompass systems analysts, programmers, designers, data base and data administration staff and technical staff.

Basic Needs

All of the above groups have needs that must be met by a systems development methodology. Some of these needs are common to more than one group. However, the successful application of a systems development methodology depends on satisfying all the groups' basic needs, which fall under the following headings:

- *Project management and control*, which includes budgets, deliverables, schedules and product quality assurance.
- *Techniques*, which impact development from the time an initial user requirement is identified until the installation of a complex system. Techniques can shape the structure of a methodology so that two versions of a methodology, developed from an identical ASDM prototype or model, can appear completely different. Tied to the techniques to be used is the need for training in the development process.

OUR TERMINALS ARE ACCEPTED AT THE FINEST SCHOOLS.

Prestigious schools like Harvard, Yale, Princeton and the University of California like to be selective when picking their data terminals.

So the fact that we sell, lease and service only state-of-the-art terminals and peripherals like Texas Instruments, DEC, ADDS, Diablo, C. Itoh, TeleVideo and Anderson Jacobson is a big plus.

We know there are a lot of distributors and manufacturers you can buy or lease your terminals from.

So we have to work harder to stay at the head of the class. If that makes sense, why not call us and learn more.

COMPUTREND
THE SOURCE FOR DATA TERMINALS

Computrend, Inc. 22 A Street, Burlington, MA 01803. Nationwide call 800-225-5378 for the Computrend sales representative nearest you. In Massachusetts, call 617-272-8372.

DEVELOPMENT METHODOLOGIES

IN DEPTH

	Senior Corporate Management	Functional User Management	User Workers	Systems or DP Line Management	Systems Project Management	Systems Project Staff	DP Operations Staff	Systems Maintenance And Enhancement Staff
Project Management and Control								
• Budgets	x	x		x	x			
• Deliverables		x		x	x	x		x
• Schedules		x		x	x	x		x
• Product quality		x		x	x			
Techniques		x		x	x	x		x
User Requirements		x		x	x	x		x
Data Structure Design		x	x	x	x	x		x
Computer Systems Design				x	x	x		x
Systems Manufacture								
• Computer process instructions (programmable code)					x	x		x
• User procedures		x	x		x	x		x
• System test data (Does the system work as specified?)					x	x		x
Systems Implementation								
• Computer hardware/operating software availability				x	x	x	x	x
• User test data (Will the system meet the user's requirements?)		x	x	x	x	x	x	x
• User training		x	x		x	x		x

Needs of People Involved in Systems Development, Operations, Maintenance and Enhancement

• *The user's requirements.* The user referred to here is anyone for whom a system has to be designed, developed and implemented. This requirement must be in a form clearly understood by the user and convertible to a computer systems design if necessary.

• *Data structure design* is the structure and organization of data in the data bases and computer files.

• *Computer systems design* is a structure or architecture from which computer-processible instructions can be derived.

• *Systems manufacture* is the building of a product that provides both the computer and the user workers with instructions for processing data. This includes production of computer process instructions (programmable code), user procedures and systems test data (that is, all data associated with testing the system to ensure it functions as specified and includes both input and test results).

• *Systems implementation,* which means the installation and use of the system to meet the user's requirements. This includes availability of hardware and operating software, user test data (all data associated with testing the system to ensure it provides information as specified in the user's requirements) and user training in all user procedures.

The matrix in the accompanying figure indicates the relationships between the categories or groups of people involved in the development process and their needs.

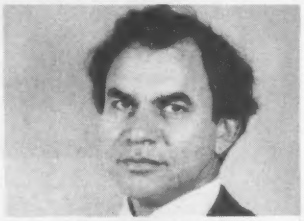
What should DP management do to ensure that application systems are properly designed, developed and implemented? An organization about to embark on the acquisition of an ASDM or to build one on its own should consider the following:

1. An ASDM is a costly and time-consuming project, considering development costs as well as education of all concerned. Rather than develop one from scratch, the optimum solution would be to acquire a model general-purpose ASDM that could serve as a prototype and mold it according to the techniques to be used, organization requirements and so on.

2. The development of any major applications system should be preceded by the conscious identification of the ASDM activities to be carried out and the techniques to be followed in the design, development and implementation of the system.

3. Any ASDM must meet the needs of all the categories of people involved in design, development and implementation; in the operation of systems; and in systems maintenance and enhancement. These groups of individuals and their basic needs are displayed in the figure.

Finally, no methodology or technique can replace competent and knowledgeable project management and staff. Their job can only be made easier by the use of tools such as design techniques and ASDMs.



About the Author

Denis Connor is manager, administrative services, of the Information Systems Development and Processing Branch of the Toronto-based Workmen's Compensation Board. He joined the Workmen's Compensation Board in 1968 and assumed his present position in 1977.

Connor has been associated with computer systems development since 1967, when he was hired by Shell Canada as a systems analyst. Prior to that he served three years in the Royal Canadian Air Force in industrial engineering.

In addition to his book Application Systems Development Methodologies, *from which this article is excerpted, Connor has published several articles on industrial engineering.‡*

REFERENCES

1. *"Flow Diagrams, Turing Machines and Languages With Only Two Formulation Rules,"* C. Bohm and G. Jacopini, Communications of the ACM, *May 1966.*

2. Structured Design, *Ed Yourdon and Larry Constantine, second edition, Yourdon Press, New York, 1978.*

3. Structured Analysis and Systems Specification, *Tom DeMarco, Yourdon Press, New York, 1978.*

4. Structured Systems Analysis: Tools and Techniques, *Chris Gane and Trish Sarson, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1979.*

5. Principles of Program Design, *M.A. Jackson, Academic Press, 1979.*

6. Structured Systems Development, *Kenneth Orr, Yourdon Press, New York, 1977.*

7. Structured Requirements Definition, *Kenneth Orr, Ken Orr and Associates, Inc., Topeka, Kan., 1981.*

USERS OF DG MV8000, DEC 11/70, PDP-11 VAX, PRIME 750, HP3000

What are you going to do about power conditioning?

Your mini-computer needs power conditioning–but what solution are you going to buy? A costly and finicky UPS or an expensive (and often ineffective) transformer/regulator?

There's a better choice–the effective and affordable **ATLAS MPC Mini Power Conditioner.*** The ATLAS MPC uses the superior power conditioning of a motorgenerator to provide 100% clean computer grade power free from flickers, transients, brownouts, instantaneous sags and surges, under and over voltage conditions.

And only the ATLAS MPC offers compact sizing, computer grade ground, a handsome soundproof cabinet, fastest delivery, *and* the lowest cost! That's why ATLAS is the industry leader in rotary power systems.

Call or write for ATLAS MPC literature and application information.

*MPC Mini Power Conditioner available 10 to 18KVA. Larger Power Conditioners available to 500KVA.

ATLAS ENERGY SYSTEMS 9457 Rush Street El Monte, CA 91733 (213) 575-0755

LEADER OF THE PACK

You'll see a lot of confusing claims for disk packs and storage modules, but here are a few tips that can help you make the right choice when you're specifying your next pack:

BASF products represent BASF technology and quality, because, unlike many suppliers, we make them ourselves.

We polish our uncoated metal disks to a mirror finish for optimum headflight characteristics and virtually no possibility of media-induced headcrash.

We coat, polish, and burnish each disk by our own process, assuring you of long-lasting, trouble-free operation.

We magnetically orient all oxide particles in the disk coating for greater packing density.

We drive-test each pack before it leaves the factory, for top performance with no surprises.

BASF has your configuration and format*...at a competitive price, ready for immediate delivery.

For the name of your nearest supplier, write BASF Systems Corporation, Crosby Drive, Bedford, MA 01730, or call 800-343-4600.

*For Burroughs: Front-load single disk cartridges, 80 MB Tridents.
For CDC: 80 and 300 MB storage modules, Phoenix single disk cartridges.
For Data General: 50, 100, 200, and 300 MB disk packs, top-load single disk cartridges.
For DEC: 100 and 200 MB 12-high packs, front-load single disk cartridges, 80 and 300 MB storage modules.
For Honeywell: Phoenix single disk cartridges, 80 and 300 MB storage modules, 100 MB packs.
For IBM: 100 and 200 MB 12-high packs, top and front-load single disk cartridges.
For Wang: Phoenix single disk cartridges, 80 and 300 MB storage modules, top-load single disk cartridges.

BASF

BASF Systems Corporation
Attn.: Marketing Services, Computer Division
Crosby Drive, Bedford, MA 01730

Please send me information on BASF disk packs.

Name/Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone _____

CW2882

1960

1970

1980

Third Decade Of Concern

By Jerome Lobel

1990

From 1960 to 1970, very few incidents of computer abuse were identified. There was little understanding of potential risks that might be attributed to computer-based information systems. We are, therefore, about to enter our third decade of concern about an area of risk we now commonly refer to as computer security and privacy.

About 10 years ago, word began to leak out that computer systems might present a new kind of risk to their users. Professionals in the security field were among the first to recognize this. It took third-generation computer technology to open "Pandora's box" as far as security and law enforcement people were concerned.

In particular, five characteristics of new computer systems and their usage alarmed security people in 1970:

- Businesses and government agencies were beginning to implement more sensitive computer applications than ever before.
- Considerably more data was being stored in smaller and smaller memory devices.
- Users began to share computer resources more than ever before.
- More terminal devices were being connected to computers.
- We had not found any way to assure ourselves that the computer systems we were installing were capable of being audited.

Almost 10 years have passed since computer security and privacy became a national concern. And so where are we now? (Please reconsider the above five points.)

Does this mean no progress has been made? Not in the least. According to recent research reports:

- There are more than 1,250,000 computers in use in the U.S. today, including general-purpose machines and minicomputers.
- Computing speed has increased from tens of thousands of instructions per second to 100 million instructions per second.
- Storage capacities of high-speed memory have increased from 150,000 characters in the 1960s, with accessibility in tens or hundreds of microseconds, to millions of characters accessible in a fraction of a microsecond.

By the end of this decade, we expect to have more than 100 million computers, including supermicroprocessors, operating in the U.S.

So yes, we have made progress. However, another kind of "progress" has resulted from advances in DP technology. Consider the following:

- An individual using a pointed instrument caused $589,000 in damage to a single computer in New York City.
- An armed terrorist group in Italy singled out corporate and state computer centers as targets for

IN DEPTH

attack, bombing at least 10 such centers throughout Italy in a 10-month period.

• The equity funding computer system fraud committed in the U.S. involved insurance policies valued at more than $2 billion.

• Three former University of Alberta students were accused of "stealing" telecommunications services by setting up unauthorized computer accounts in Canada.

• Welfare agencies in the U.S. are paying out large sums of money to cheaters.

• Banks are losing millions of dollars via wire fraud and juggling of computerized accounts.

• U.S. multinational companies are worried about constraints being placed on the flow of information across national borders — the so-called transborder data flow problem.

Computers and data processing personnel are often blamed. Or at least, they are considered major contributing factors in the increasing number of incidents relating to abuses of personal privacy and computer crime.

Social Impact of DDP

Since we are facing more widespread use of a whole new generation of computers — distributed data processing (DDP) systems — this is a good time to clarify some major issues that relate to the potential social impact of this systems concept.

Answers to questions such as these should help with this clarification:

1. What will be the impact of the latest generation of computer systems upon individual privacy?
2. Will increasing computer crime slow the movement toward DDP and other modern system implementations?
3. How can computer hardware and software suppliers contribute to system privacy and security?

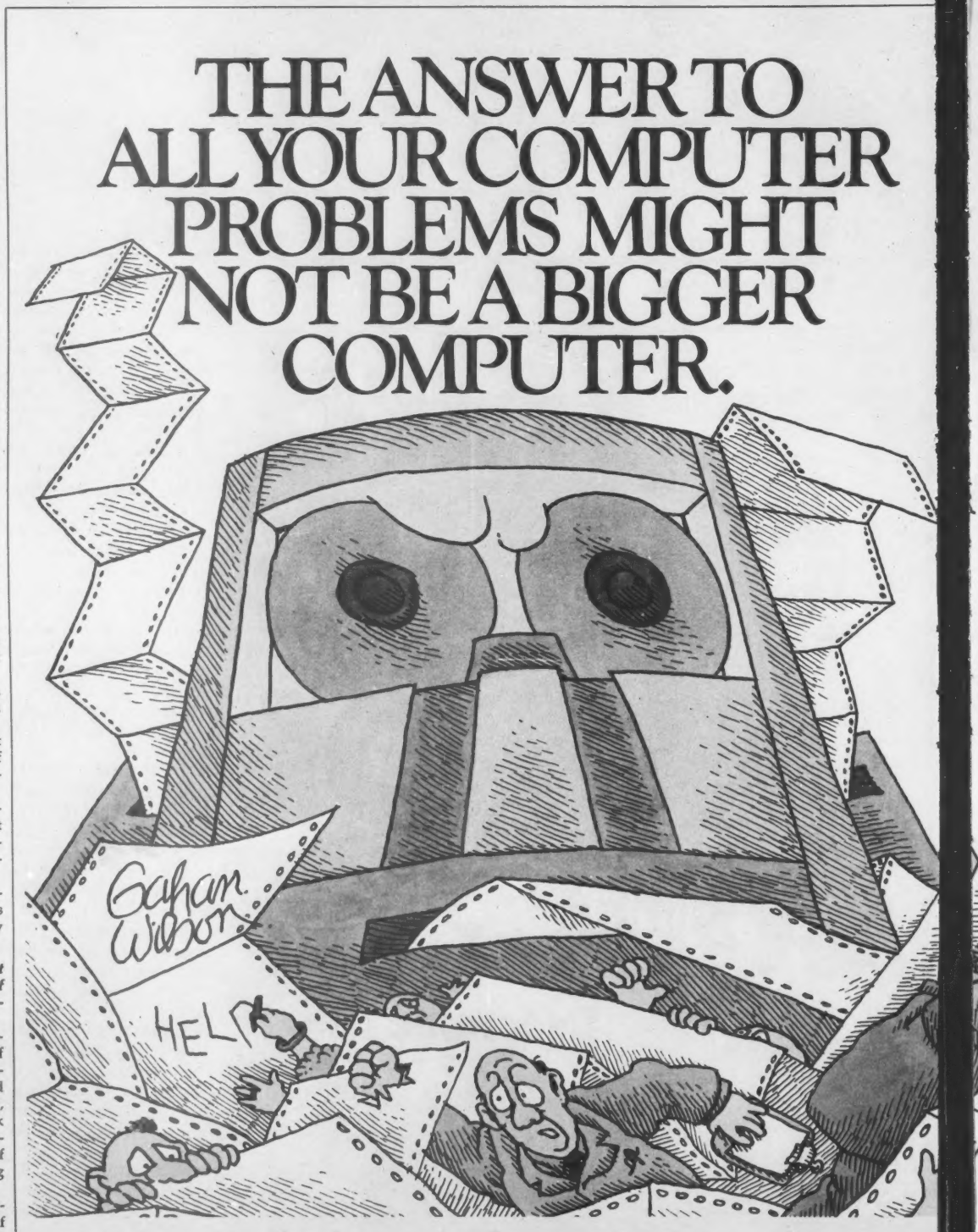
1. What will be the impact of the latest generation of computer systems upon individuals' privacy?

DDP systems put processing power into the hands of the person who needs the information. That person could be the company president, the bank teller, the stock clerk or the personnel manager. And the number of these end users is expanding at a rapid rate. How rapid?

A report published in December 1978 said that 53% of a large number of organizations surveyed had actually begun to distribute processing capabilities to some degree. The vast majority of the remaining 47% who had not yet started were actively considering the possibilities.

As to the forecast for growth, the report estimated that the dollar value of DDP product shipments would grow at a compounded growth rate of 59% per year. However, an even stronger indication of rapid growth in DDP is evidenced by the recent entry into the marketplace of a mounting number of computer vendors. Almost every computer manufacturer has announced new hardware and increased its marketing push toward DDP.

What, then, will be the impact of our latest systems on privacy and security? Certainly, they will influence



the ways we run our businesses.

First, let's examine the negative effects and then review a sample of the characteristics that make privacy and security more difficult to control in a distributed environment:

• *More data about critical business and personnel matters will be removed from the individual's physical control.* The data will be stored in a data base somewhere in the network, rather than locked in a desk drawer or file cabinet.

• *More people will have access to the computer.* Therefore, many more will have potential access to sensitive information.

• *The person intent on doing harm or misusing information has a good chance of remaining anonymous.* He does not have to be physically present on the organization's property.

• *Errors exist in all systems; but in a distributed system, they can proliferate through the system at electronic speed.*

• Finally, the problem that will probably cause the most concern: *As the DDP system expands into more and more areas, the more dependent the users become on the system* — therefore, the greater the potential risk.

These problems are all potentially real, but not insurmountable. In fact, they may be offset by the positive factors surrounding our latest systems.

For example, although data is no longer under the individual's physical control and more people potentially have access to it, a distributed system is capable of rigidly controlling that access. One critical element in this procedure is the establishment of positive user identifications. A whole range of methods is available today to help establish a user's ID — everything from simple password schemes to ID cards and badges to devices that check the physical characteristics of a person, such as a fingerprint or even a voice.

A distributed system can perform extensive logging and auditing. It can keep track of access attempts, requests for certain information and attempts by individuals to use others' files. The fact that the system maintains detailed logs and can audit what is happening within itself can serve as a powerful deterrent to someone who is considering doing you harm.

A DDP system can also perform extensive error checking of input data to reduce the chances of errors getting into the system. In the event that they do, corrections can be distributed through the system rapidly.

Data Encryption

Data encryption can protect sensitive data during transmission and storage. Encryption is a way of coding data — using a key to change its form so that someone who does not know the key cannot read the data.

And finally, to ensure that a catastrophic problem at one location does not put you out of business, you can have multiple copies of files at multiple locations that can also provide backup computing power.

In concluding the answer to the first question, it appears that the positive factors outnumber the negative

If we've seen it once, we've seen it a hundred times.

The whole DP department is on full overload cranking out mountains of reports. Programmers are working overtime to develop better applications. But they're months behind.

And company management has to plow through mountains of printout just to get the top line information they need.

No, the answer to your problems isn't a bigger mainframe. More bodies. Or more overtime.

What you really need is a better way to get all of your mainframe's raw computing power distributed into the real world, where it can do some good. And at Intel, that's exactly what we've got.

We call it Information Resource Management Technology.

The first stage of our efforts is the SYSTEM 2000® Data Base Management System. Which includes everything from application development tools to a query/update language to a conversational report generator. And gives your programmers and clerical people the tools they need to get a lot more work done.

But that's just the beginning.

With our wealth of VLSI experience, we're able to combine hardware and software into other tremendously effective solutions. Like our new Data Base Assist Processor. Which couples the data management capabilities of SYSTEM 2000 DBMS with the fast paging capabilities of our FAST-3800 semiconductor disks. It improves transaction capacity 100%. And cuts user response times by 50%.

As co-implementer of the Ethernet™ local area network, we're making major breakthroughs in data communications, too. So it's easier to move information from place to place, besides managing and retrieving it once it's there.

Information Resource Management Technology. It's more than software. And more than hardware.

You can't get anything like it from any mainframe manufacturer. Or any independent software vendor. Only from us.

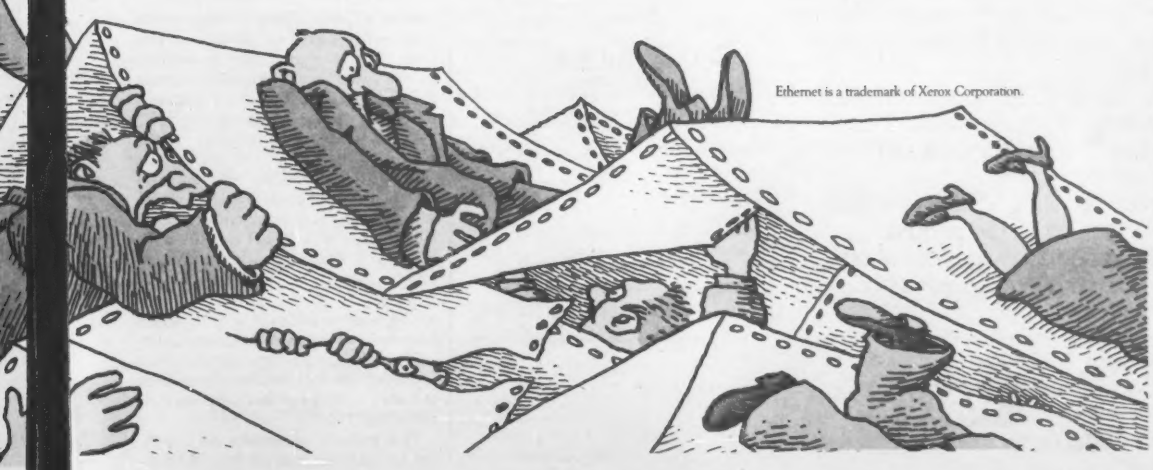
And even bigger things are on the way. Because we think it's about time somebody gave you bigger solutions.

Instead of bigger problems.

Get in touch now and we'll tell you more. Write: Intel, Market Information Office, P.O. Box 9968, Austin, TX 78766.

Or call (800) 531-5304. In Texas, (512) 258-5171.

intel® delivers solutions



Ethernet is a trademark of Xerox Corporation.

ones, provided that security measures are applied in a systematic, consistent manner in the DDP environment.

2. Will increasing computer crime slow the movement toward DDP and other modern system implementations?

Economic — or white-collar — crime is a serious problem today. It is estimated that it costs the American public as much as $40 billion per year. Many white-collar criminal activities do not involve the use of computers, but when computers are used, the average loss per crime is estimated at $450,000, compared with the average loss per bank robbery of about $9,000.

There are a number of serious problems associated with white-collar crime — among them, the difficulty of detection and the even more serious one of prosecuting the culprits after they are caught. The Federal Bureau of Investigation estimates that 1% of all computer crime is detected and approximately 7% of detected crimes are reported to the police. Moreover, in those cases brought for prosecution, only one out of 33 results in a jail sentence for the accused. Simple calculation leads to the conclusion that only one out of every 22,000 computer criminals is going to jail.

Statistics like this make it very clear that prosecutors must obtain stronger support from the courts.

Consider one final example of how serious the problems are. A security publication recently discussed the problems with prosecuting dishonest employees. The article claimed that the limitations of the criminal justice system are particularly evident in major cities. For example, the district attorney in a major city said privately that his office, because of backlogs, could not participate in an investigation of employee dishonesty involving *less than $200,000.*

3. How are computer hardware and software suppliers contributing to privacy and security?

First, computer suppliers are firmly committed to the move toward DDP. They are also committed to building hardware and software that is "responsible" and can be made "secure."

They fund many internal research projects and participate in others sponsored by the federal government. Research efforts past and present include secure communications networks, secure front-end network processors and the technology of certifiably secure systems.

Suppliers are attempting to bring security capabilities to their commercial customers through new and improved software and operating systems. They continually analyze how to generate security as a part of future computer architectures. They constantly evaluate the marketability of security features that will have flexibility, minimal user impact and allow a choice by the user with regard to trading off cost and performance for more security if needed.

Overall, security is a shared responsibility, since no computer architecture can guarantee 100% security. Computer suppliers can make security easier to maintain, but systems users have to design their own internal controls in their application systems.

In addition, many systems suppliers continuously provide symposiums, seminars and consultation assistance designed to educate computer users and others.

Regulation of Privacy Abuse

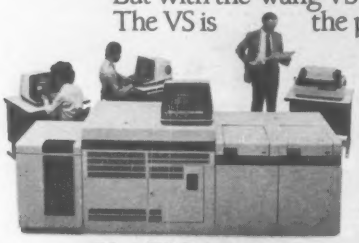
Some of the strongest statements made with regard to the type of privacy legislation that may be needed in the future were given by former President Jimmy Carter in a speech he made to Congress on April 2, 1979: "I am announcing today sweeping proposals to protect the privacy of individuals. 'The right to be let alone,' Justice Brandeis wrote 60 years ago, 'is the right most valued by civilized men.' That right is built into our Constitution, which forbids unwarranted searches of citizens and their homes. At the time the Constitution was written — a time when private conversations were conducted face-to-face or through the mail and most private records were kept at home — those protections seemed adequate.

"The growth of society and technology has changed all that. We con-

They were made for each other.

You know what happens when your processing needs grow faster than your mainframe capabilities: You suddenly begin to lose control.

But with the Wang VS (Virtual Storage) computer, that won't happen. The VS is the perfect match for your IBM mainframe. It's programmed in the same language. It's interactive, so you can easily distribute information to people who need it most. It can off-load dedicated transaction-driven programs.



Wang VS Computer.

And it can grow as fast as your company. From 1 to 128 workstations depending upon application. 128K to 2 million bytes of memory. And 30 meg to 4.6 billion bytes disk storage.

A programmer's dream.

The Wang VS is one of the best programming tools you can buy. Several programmers work interactively with the computer from their own terminals in instruction sets and languages that aren't foreign to them (like Cobol, RPG II, Basic, and others). So development time is virtually cut in half.

And only the Wang VS computer can offer you Wang word processing—#1 in the world. Plus the proven Wang Mailway™ electronic mail and message system.

As you can see, the Wang VS lets you distribute the power of the computer to the people who need it most without taking away your control. Because it's made to work hand in hand with your mainframe.

For a demonstration of the Wang VS computer, call

1-800-225-0643

(in Massachusetts call 1-617-459-5000, extension 5711). Or send this coupon to: Wang Laboratories, Inc., Business Executive Center, One Industrial Ave., Lowell, MA 01851

Name_____

Title_____

Company_____

Address_____

City_____ State_____ Zip_____

Telephone ( )_____

A233

WANG

Making the world more productive.

© 1981 Wang Laboratories, Inc.

TSI announces a brilliant acquisition.

It's a company called Synergetics.

And it not only puts us a step closer to satisfying *all* your software needs. It gives us the opportunity to offer you what we consider to be the three finest software products in their categories.

First, there's Data Catalogue 2, the data dictionary that's not tied to any DBMS. And that's designed for ease of use, so it can be used by anyone—not just programmers and technicians.

Then, there's Pro/Test, the most powerful test data generator on the market. A four-module, top-down system that detects errors before they turn into expensive nightmares. And that's completely independent of any program. Or programmer.

Finally, there's Facets, the new automated approach to database design—and the only one of its kind. A dictionary-based tool which works with any DBMS to simplify the entire design process.

All three of these products are now backed by TSI's efficient and responsive support/service staff.

All operate on IBM mainframe and compatible systems. (In addition, Data Catalogue 2 operates on Honeywell and Univac mainframes.)

And all are hardworking software products that are easy to install. And easy to use. Just like Key/Master, Data Analyzer, Docu/Master, CICS/MM, Task/Master, Audit Analyzer, and Project Monitor.

If you'd like more illuminating details about Data Catalogue 2, Pro/Test, and/or Facets, call us at (203) 853-2884.

Or send the coupon.

TSI INTERNATIONAL
System Products Division
50 Washington Street
Norwalk, CT 06854

Please send me more information about
___Data Catalogue 2
___Pro/Test ___Facets.
___Please have a TSI representative call.

Name_____
Title_____
Company_____
Address_____
City_____
State_____ Zip_____
Phone_____
CPU_____

Hardworking software that's easy to use.

National CSS
a company of The Dun & Bradstreet Corporation

TSI International
System Products Division
50 Washington St., Norwalk, CT 06854

IN DEPTH

front threats to privacy undreamed of 200 years ago.

"Whenever we take out a loan, apply for insurance, receive treatment at a hospital, obtain government assistance or pay out taxes, we add to the store of recorded information about our lives. That store is growing exponentially. In 1940, for example, 1.2 billion checks were written — in 1970 it was 7.2 billion. Personal information on millions of Americans is being flashed across the nation from computer to computer.

"These changes are not the product of any plan to invade our privacy. They have developed naturally with the growth of our economy, the expansion of public and private institutions, the mobility of our citizens and the invention of computers and telecommunications systems.

"Our challenge is to provide privacy safeguards that respond to these social changes without disrupting the essential flow of information."

Another category of legislation is being considered at both the national and state levels. The legislation is intended to deal specifically with computer crimes. Eleven states have already passed computer crime legislation and more will follow.

At the national level, it is only a matter of time before federal legislation such as the proposed Senate bill S. 240 will be passed that will encompass computer crime. Only disagreement over the scope of the legislation and over the matching of the seriousness of the crime to an appropriate penalty appears to have slowed down its early passage.

The final chapter in the tale of computer security and privacy has yet to be written. Will we resolve all of the problems in our third decade of concern — between now and 1989?

It would take an extremely optimistic person to answer this question positively. Some authorities feel that whatever solutions are proposed, they must contend with a technology that tends to change drastically about every five years or so.

On the other hand, the federal government has spent millions of dollars researching possible technical solutions. Definitive studies have been made in such areas as certifiably secure systems, security kernel technology, multilevel systems access controls and new data encryption standards.

Human Factor

Although much has been learned from these important research efforts, the chances for a complete hardware/software solution to computer abuse are remote. It appears that regardless of how much money is spent on technical solutions, the most practical approach must encompass what is still the most important element in every information system, the *human factor*.

In this regard, there are at least four areas that must produce results before we can expect any drastic decrease in computer system abuse:

1. *Education.* People given responsibility for preventing computer abuse should receive even more interdisciplinary training in such areas as data processing, security and computer auditing and control.
2. *Risk Management.* Executive training in the area of risk or threat management should be promoted.
3. *Computer audit guidelines and standards.* Professional computer audit guidelines and standards should be developed in order to increase the quality of system audits.
4. *Computer Crime and Privacy Legislation.* Legislation containing appropriate criminal and civil penalties should be passed in order to cut down on computer privacy abuse and computer-related crime.

About the Author

Jerome Lobel's career in data processing spans 21 years. He has spent approximately half this time in projects associated with computer security and privacy.

His present responsibilities at Honeywell, Inc. include the coordination and presentation of computer security and privacy educational activities for the company. He is the originator and chairman of Honeywell's Annual Computer Security and Privacy Symposium, which is held in April each year.

Lobel received his B.S. and MBA from the University of California at Los Angeles and is a member of Beta Gamma Sigma, a national honor society.

Think about it.

IBM
Comdisco
Amdahl
Storage Technology

Of all these companies,
only one buys, sells and
leases equipment manufactured
by the other three.

COMDISCO®

6400 Shafer Court, Rosemont, Illinois 60018 (312)698-3000 TWX 910-253-1233

Branch Offices:

Atlanta	404-256-5956	San Francisco	415-944-1111
Chicago	312-698-3000	Washington D.C.	301-441-1000
Connecticut	203-853-6966		
Dallas	214-258-6444	Latin America	305-666-6258
Florida	305-428-3177	Toronto	416-968-7135
Ft. Worth	817-534-1774	Paris	297-0180
Michigan	313-644-1500	Switzerland	021-71-09-35
New Jersey	201-568-9666	West Germany	(2434) 5048

A MEMBER OF CDLA AND LISTED ON THE NEW YORK STOCK EXCHANGE

•How Secure Your Site? Report Gives Equation

LONDON, Ont. — How does a DP manager determine how secure his installation is?

"Risk Management for Computer Security Managers," a report produced here by John Carroll of the University of Western Ontario's Department of Computer Science, attempts to answer that question and many others about DP security.

According to Carroll, there are three kinds of computer security managers: the skeptic who does not think it could happen to him, the believer who has been burned already and will buy anything he thinks will protect him in the future and the risk manager who believes in getting the maximum loss-prevention benefit for the dollar.

The assistance that has been extended to this last type of manager generally has either unnecessarily complicated the concept of risk management or oversimplified the complex job of implementation, the report stated.

The result of going in either direction is a high potential loss figure, which may push the risk manager into the second category where it seems logical to go after any security fix that goes on the market, according to the report.

The report offers the following equation of risk analysis:

Risk = Hazard x Worth x Assessment of Severity and Vulnerability x Annual Occurrence Expectation of the Threat in Question Against the Particular Asset. It also details five ways to evaluate the cost of loss of an asset. These are replacement cost, business interruption, third-party liability, opportunity cost and service denial.

Managers should decide whether or not to install a safeguard based upon a cost/benefit analysis, the report maintained, with the cost being the annual cost of the safeguard. "If the difference between the benefit and the cost is positive (it is sometimes required to be greater than the cost as well), then the safeguard is considered to be cost-effective and a candidate for implementation."

The report includes a list of the DP resources to be protected, including hardware, software, data files, personnel and facilities along with the possible threats to the DP center and the controls that are available.

"The first thing to decide upon when making a risk analysis is its scope," the report continued. For a comprehensive analysis intended to establish a security policy that will be in place for some time, a whole range of controls will have to be considered, selected and their implementation prioritized.

An alternative kind of study, according to the report, is one in which one or more controls are being considered to counter

(Continued on Page 96)

Data Security

What are users doing to protect their data?

Sparked by two stories in this section of Computerworld *on Oct. 12 (one describing a New Orleans bank's method of beefing up its security methods, the other an interview with Richard Crandall, president of Comshare, Inc., who commented on the coverage of an alleged security breach at National CSS, Inc. and the security methods employed by time-sharing companies), we asked CW readers to describe their security risks and problems and what they are doing to combat them.*

Here are some of the responses we received, as well as a recent report on risk management for computer security managers.

•N.J. Electric Firm's Upgrades Achieve 'Relative Security'

PLEASANTVILLE, N.J. — Atlantic Electric Co. began upgrading its hardware and software in 1978 as part of its efforts to achieve DP security.

In 1978 the firm selected IBM equipment running under OS/MVS. "Throughout the selection process, and in our long-range plans, we had stressed the fact that information ... corporate resource. Prote... of that resource was given a very high priority in our planning," Computer Production Manager Michael G. Barnes explained.

Using risk analysis, the firm determined what items should be protected in the operating environment and then designed its security system using a combination of software, standards and organizational changes.

The software requirements included validating access to the system, allowing authorized users to access data, accounting for use of the computer, accounting for unauthorized attempts to use the system or data and accounting for both authorized and unauthorized at-

(Continued on Page 49)

•Risk Department Formed At Manufacturers Hanover

NEW YORK — Faced with the security risks inherent in a DP environment, Manufacturers Hanover Trust Co. here formed a Computer Risk Management Department in January 1980.

The charter of the department is to develop corporate data security policies and to develop procedures for identifying, measuring and controlling computer-based risks, according to its director, Vice-President Henry Mandl.

The primary task is to create data security policies, monitoring their effectiveness and raising security awareness, according to Mandl. Initial policies include formulation of the data security structure, which details basic definitions and responsibilities; data security policy, which involves the creation of the data owner, data custodian and data user matrix; security administration; and password generation and data access control.

Subsequent policy topics include business recovery planning, vital records program, risk assessment, physical access control, personnel security,

(Continued on Page 92)

•Bank of America's Checklist Evaluates Interactive Risks

SAN FRANCISCO — A checklist to help software personnel evaluate potential flaws in their interactive working environment was one of the tools employed by Bank of America here to bolster DP security.

Senior research consultant David Silverstein developed an internal working document designed to assist software personnel to assess the implications of all system commands. "Knowledge of these implications then leads to corrective actions — an agenda of tasks for system programming staff."

The paper defines the broad range of security issues in interactive computing environments and provides a checklist to assess vulnerable areas and to help guide administrators and technical personnel in their efforts to improve interactive computing service, Silverstein explained.

He based the material for the paper on his experience work-

(Continued on Page 92)

APEX=CONTROL

APEX—Automated Planning And Execution Control System

APEX does for Data Centers what Data Centers do for everyone else—automates and controls workflow and information throughput. APEX puts the benefits of automation to work in your shop.

Production control is what APEX is all about: management control; status control; elimination of JCL handling; pre-print report reviewing; dependency control; increasing throughput; upgrading training; reducing reruns . . . Real-world DP production control!

There may be imitations or stop-gap bandages, but if you're really serious about your Data Center, there is only one proven product to consider:APEX.

IBM 370, 303X, 43XX and compatibles.

I wish to learn more about the Johnson Systems' performance products I have checked off.

- ☐ **APEX** — Automated Planning And Execution Control System (Production Control)
- ☐ **ALARM** — Hardware Reliability Measurement System
- ☐ **OS JARS** — Job Accounting Report System
- ☐ **DOS JARS** — Job Accounting Report System
- ☐ **QMAX** — CICS/VS Utilization Monitor And Chargeback System
- ☐ **GOLD** — CICS/VS Graphic Online Display System

Johnson Systems, inc.

8300 Greensboro Dr.
McLean, Virginia 22102
703 821-1700 Telex 89-9100

Name _____

Title _____ Tel. _____

Company _____

Address _____

City _____ State ____ ZIP _____

CPU _____ Op. Sys. _____ TP Sys. _____

W202

Command Checklist Cuts Bank of America DP Risks

(Continued from Page 91)

ing with Western Electric Co.'s Unix, Digital Equipment Corp.'s RSTS, IBM's VM/SP and National CSS, Inc.'s VP/CSS operating systems.

Silverstein's paper organizes the security area as a table (Figure 1). One axis of the table lists security categories and issues. The second axis lists the major events of an interactive user's session.

"The cross product of the abstract categories with actual events creates a detailed map of security concerns and an agenda for investigation of the interactive computer setting," according to Silverstein.

He also describes security subject categories and events in interactive systems (Figure 2) as part of his checklist.

TABLE OF SECURITY TOPICS

	Directory Interpretation	Login	Environment Definition	User & System Commands	Error	Logoff
Identification	11	21	31	41	51	61
Authentication	12	22	32	42	52	62
Authorization	13	23	33	43	53	63
Journaling	14	24	34	44	54	64
Audit	15	25	35	45	55	65
Monitoring	16	26	36	46	56	66
Change Control	17	27	37	47	57	67

Figure 1

SECURITY SUBJECT CATEGORIES

IDENTIFICATION: A person/machine interaction designed as a request to be recognized by a computer system.

AUTHENTICATION: A person/machine interaction designed to corroborate an asserted identity.

AUTHORIZATION: An activity that consists of matching an authenticated person to the use limitations of a resource. Authorization includes several tasks: assignment of security characteristics to resources and assignment of the authority to determine security characteristics. Example: In VM

JOURNALING: Recording system events.

AUDIT: A post-facto review of recorded system behavior.

MONITORING: Real-time audit. The capability to observe system events as they happen.

CHANGE CONTROL: A computer-based process that applies revisions to executable code and/or to data and tracks the history of revisions so that the prior status of an evolving system may be re-instated.

AXIS 2 - A LIST OF EVENTS IN INTERACTIVE SYSTEMS

Each event below describes one phase of the typical computer session:

EVENT 1: A user is defined in a directory of users. This event happens when a user "subscribes" to a computing service, but the definition is interpreted each at the start of and sometimes during each computer terminal session.

EVENT 2: A user logs on. This event includes acquiring knowledge of the access protocol (telephone number, line system codes) and passing through the identity checking scheme(s) of the operating system and of application programs.

EVENT 3: A user defines or redefines the working environment. Users interact with a computing resource using commands that trigger system events. One group of events defines the user's claim to system resources and other user data.

EVENT 4: A user issues commands. The range of commands can be subdivided as follows:

EVENT 4 .1 Environment definition (see EVENT 3 above).

EVENT 4 .2 Getting information about the system.

EVENT 4 .3 Backup, restore of user files

EVENT 4 .4 System recovery

EVENT 4 .5 File/data transfer and sharing

EVENT 4 .6 User-to-user communication

EVENT 4 .7 Program development

EVENT 4 .8 Program execution

EVENT 4 .9 Resource allocation (devices, space)

EVENT 5: A user causes errors. These events are a set of system "reactions." These reactions have security implications because they may reveal sensitive system status information.

EVENT 6: A user logs off. System actions occur at this time that can influence subsequent use of the computer facility.

Figure 2

Manufacturers Hanover Forms Risk Department

(Continued from Page 91)

telecommunications security and off-premises data access devices, Mandl explained.

His plans for 1982 include internal security education offerings ranging from a one day tutorial to a multiday course. The educational efforts will aim at raising the general awareness of security issues and at providing a formal view and understanding of the computer risk assessment process.

Mandl's security awareness raising effort is working in conjunction with his department's security administration program. Each of the bank's multiple data centers within its operations division is required to have a full-time security administrator who is responsible for implementing data security policies and procedures. Their security assignments come directly from the Computer Risk Management Department.

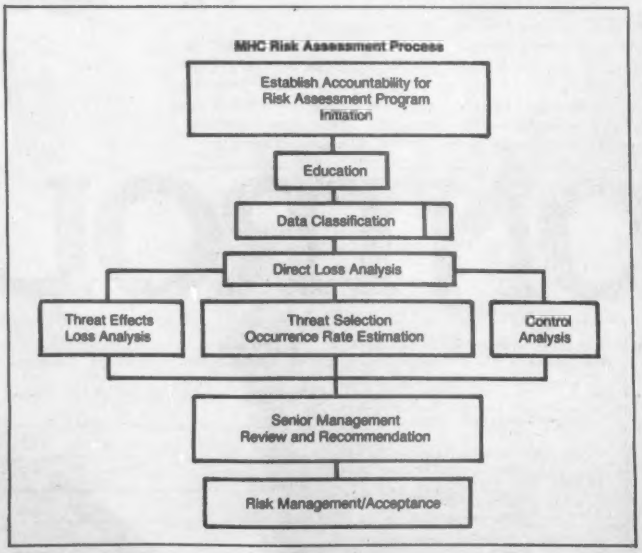


Figure 3

A risk assessment methodology (see figure) is being developed to measure compliance with each of the policies, to determine the relative levels of risk in each data processing environment and to help select the optimum balance of security controls, Mandl said.

"This methodology, a hybrid of qualitative and quantitative elements, depends for its effectiveness on the structured estimation of risk by data owners, data custodians, data users and auditors."

The ultimate goal, according to Mandl, is a risk management or risk acceptance decision by the data owners, data custodians and senior management. "Once documented, these decisions are monitored by the Auditing Department to ensure overall compliance with Manufacturers Hanover Corp. policies, and they serve as documentation supportive of the guidelines contained in the Foreign Corrupt Practices Act," Mandl said.

Mandl's department also is developing a corporate asset protection program to address vital aspects of data security. The basic elements of the program are problem definition, problem identification, problem measurement and problem control, he said.

Basic Four Management System Handles Club Memberships

TUSTIN, Calif. — The Basic Four Information Systems Division of Management Assistance, Inc. has announced a version of its information system for membership accounting for clubs and organizations.

The Membership Management System is designed to handle membership accounting and coordination for country clubs, homeowners' associations and similar organizations. The system reportedly allows analysis of memberships, facilty usage, club schedules and guest charges. The typical cost of the software is $12,000.

Further information can be obtained from Basic Four Information Systems Division, Management Assistance, 14101 Myford Road, Tustin, Calif. 92680.

ESCAPE from IMS/DL1 to IDMS-1982.

Move your IMS/DL1 applications easily to IDMS-1982.

With ESCAPE, you simply install IDMS-1982 and use your existing IMS/DL1 application code as is. You waste no money on conversion, and you retain your valuable investment in completed code. You then use IDMS-1982 for new applications.

With ESCAPE and IDMS-1982 you get the system some experts said couldn't be done.

IDMS-1982 products include OnLine Application Development, Distributed Database, Integrated Data Dictionary, OnLine Query, OnLine English, Universal Communications Facility, INTERACT, EDP-Auditor, *and* the first relational view of IDMS, the industry's most powerful production database system. Application software includes a General Ledger System, the Cullinane Integrated Manufacturing System, and a Customer Information System for the banking industry. All are or will be fully integrated with IDMS and its related components.

IDMS-1982 products work with IBM 360, 370, 30XX and 43XX computers or plug-compatible equivalents.

Hear more about ESCAPE. Attend an IDMS-1982 Seminar in your area.

Atlanta, GA, Mar. 2
Austin, TX, Feb. 17
Baltimore, MD, Feb. 16
Boston, MA, Mar. 9
Buffalo, NY, Mar. 3
Charlotte, NC, Feb. 11
Charlottesville, VA, Mar. 4
Chicago, IL, Mar. 2
Columbia, SC, Feb. 18
Decatur, IL, Feb. 25
Des Moines, IA, Feb. 23
London, ONT, Feb. 16
Madison, WI, Feb. 17
Montreal, QUE, Feb. 17
New Orleans, LA, Mar. 9
Newport Beach, CA, Feb. 25
New York, NY, Feb. 23
Orlando, FL, Feb. 23
Ottawa, ONT, Mar. 4
Philadelphia, PA, Feb. 23
Phoenix, AZ, Feb. 23
Piscataway, NJ, Mar. 9
Portsmouth, NH, Feb. 18
Raleigh, NC, Mar. 2
Regina, SASK, Mar. 11
Richmond, VA, Mar. 9
Rochester, NY, Mar. 2
Rockford, IL, Feb. 11
St. Louis, MO, Mar. 9
San Diego, CA, Mar. 9
San Jose, CA, Mar. 2
Seattle, WA, Feb. 25
Shreveport, LA, Mar. 11
Southfield, MI, Mar. 4
Syracuse, NY, Feb. 18
Tallahassee, FL, Feb. 25
Vancouver, BC, Feb. 25

Cullinane
Database Systems, Inc.
400 Blue Hill Drive
Westwood, Mass. 02090
(617) 329-7700
Telex: 200102

Database Systems

Please send me: CW/2-8-82
☐ ESCAPE and IDMS-1982 Information
☐ Information on other seminars at later dates
☐ I'd like to attend your IDMS-1982 Seminar
in _____ (City) on _____ (Date)

Name
Title
Company
Address
City, State, ZIP
Telephone
My computer is

Mail to: Rosalie Cope, Cullinane Database Systems Inc., 400 Blue Hill Drive, Westwood, MA 02090

Database: Cullinane

CICS Gets Print Spooler

MOUNT FREEDOM, N.J. — Macro 4, Inc. has announced a software package designed to provide a print spooling capability for users of IBM's CICS under the DOS/VS and VSE operating systems.

Cicsprint reportedly enables users to direct print output from a CICS application to the IBM spooling facility (Power) print queue and to print from Power's print queue to a CICS 328x printer.

The software is designed to allow users to direct print jobs on the Power print queue to any IBM 328x or 3262 printer. The jobs on the Power print queue may have been batch-produced or produced using Cicsprint's CICS-to-Power spooling, the vendor said.

CICS screens also can "Logon" to Cicsprint to control printers, display data directly on a screen and write data to the Power print queue with segmentation of print jobs under user control, according to Macro 4. In addition, there is user-controlled routing and rerouting of spooled data to CICS printers.

Cicsprint leases for $100/mo on a one-year lease, Macro 4 said from W. Hanover Ave., Mount Freedom, N.J. 07970.

Mapping Package Operates on IBM, PCM

RESTON, Va. — A computer mapping package designed to display data geographically at a glance has been introduced here by Caci, Inc.

Called Accumaps, the mapping package is written in Fortran and operates on IBM or plug-compatible mainframes (PCM). It reportedly can summarize pages of printed reports with a single map or a series of maps intended to help decision makers monitor performance, identify trends and spot situations that are changing rapidly.

The Accumaps' user controls all map characteristics such as size, area of coverage, legend box placement, shading, pie charts and user-defined territories (such as sales territories) through the use of keywords and their associated parameters. Accumaps reportedly accepts user data for display in four different formats and can produce maps on a variety of devices, including plotters from California Computer Products, Inc. and Zeta Research, Inc. and terminals from Tektronix, Inc.

Accumaps reportedly is supported by several cartographic data bases and provides special features, including international political boundaries for the world; internal political boundaries of major countries; and U.S. city names.

A perpetual usage lease for Accumaps can be purchased in a single payment for $22,000. Caci is at 11495 Sunset Hills Road, Reston, Va. 22090.

'Comparex' Updated for CPUs Under OS

SAN MATEO, Calif. — Serena Consulting here has announced Release 4.1 of Comparex, a file comparison utility for IBM and plug-compatible mainframes running under OS.

The software reportedly compares two files of any structure or organization, including Isam and Vsam. The two files can be compared in chronological order or synchronized by one of two methods. The first involves up to 40 keys in ascending or descending order that are not necessarily in the same relative position. The second is by segment synchronization with or without keys for unloaded versions of any data base management system's data base at the segment level.

There are various report printing options, including record extraction for test file generation, self-tutorial in both foreground and background and field/mask offset for file conversions.

A perpetual license for Comparex is available for $8,000; monthly lease plans also are offered. Serena Consulting can be reached at P.O. Box 5574, San Mateo, Calif. 94402.

SAS Product Installations in the USA
December 1981
The best in software and service . . . from SAS.
As part of the SAS commitment to provide "state of the art" software, we pledge to support our products with the best in service. New releases, timely enhancements and system updates are part of that service. SAS/GRAPH's new facility for producing prism maps exemplifies the continuing development you can depend on. And that's just one of many examples.
As graphics hardware evolves, so does our software. With SAS/GRAPH, you don't need a different software system for each of your different graphics devices. The same SAS/GRAPH system supports Calcomp, Chromatics, Hewlett-Packard, IBM, ISC, Ramtek, Servogor, Tektronix and Zeta equipment. SAS/GRAPH also provides a universal driver that can be easily linked with vendor-supplied software for most other devices. And as new devices are introduced, you can count on support from SAS/GRAPH.
Prism maps – no extra charge.
Additional hardware support – no extra charge.
That's what SAS Institute is all about...the best in software and service.
Call or write today: SAS Institute Inc., Box 8000, SAS Circle, Cary, NC 27511-8000. Phone 919/467-8000. Telex 802505.
In Europe: SAS Software Ltd., The Centre, 68 High Street, Weybridge, Surrey KT13 8BL, UK. Phone 0932-55855. Telex 8954665.
SAS products run on IBM 360/370/30xx/43xx and compatible machines, in batch under OS and OS/VS, and interactively under VM/CMS and TSO.
SAS saves time.

without us, your IMS response time may not be in time.

Boole & Babbage's software products make a difference where it matters most: *where your customers can see it!*

When you have both CONTROL/IMS™ and CONTROL/IMS REALTIME™ you can monitor response times on line to detect and correct service problems before the phone rings with a user complaint. Our Response Time Option is the first and only software tool that gives you instant information on response times for any IMS transaction, class, region or user.

On its own, CONTROL/IMS REALTIME gives MTO's, systems programmers or applications analysts instant insight into IMS with the diagnostic tools to isolate bottlenecks in the system. Our Asynchronous Services option automatically monitors 69 key performance indicators. And with this option CONTROL/IMS REALTIME will automatically send out warning messages when user-defined thresholds have been exceeded within IMS.

CONTROL/IMS lets you manage IMS based on informative reports that the IBM product alone can't supply. CONTROL/IMS provides complete performance evaluation, planning, forecasting and financial management information and summarizes it to allow for historical trending. The standard reports show resource utilization by transaction, program, terminal and data base. You can even create your own custom reports. And CONTROL/IMS is the most accurate tool available for equitable user chargeback, because it's the only one that tracks the system at the transaction and terminal levels.

Both CONTROL/IMS and CONTROL/IMS REALTIME are fail-soft and work without changing a single line of IMS code.

Try us—with no obligation

You can test and evaluate CONTROL/IMS or CONTROL/IMS REALTIME for 30 days with no obligation to buy. To make it even easier for you to get the benefits that come only with both products, we offer a significant discount when you purchase CONTROL/IMS and CONTROL/IMS REALTIME together. And if you already have one of our IMS products, you may still qualify for a discount on the second. If you are just now converting to IMS, CONTROL/IMS and CONTROL/IMS REALTIME are invaluable educational tools for teaching MTO's and systems programmers the intricacies of IMS operation. Our IMS products enable you to get IMS running efficiently from the beginning. And there's a special transition program available to you. For more information, fill out and send the coupon to Boole & Babbage, 510 Oakmead Parkway, Sunnyvale CA 94086 or call TOLL FREE 800-538-1893 (in California call 408-735-9550).

Boole & Babbage

Harder Working Software

Here's my application for the IMS Harder Working Software!

Name_____

Title_____

Company_____

Address_____

City_____ State_____ Zip_____

Phone( )_____

CW 2/8/82

Report Tells How to Assess Security Risks at Your Site

(Continued from Page 91)

some perceived exposure. A step-by-step procedure for developing this type of analysis is detailed. The risk manager must first obtain a detailed description of his computer system. He should then identify his assets and evaluate them in terms of replacement cost, business-interruption cost, third-party liability, opportunity cost and cost of obtaining alternative DP services, if necessary.

Threat identification is the next step, the report continued, describing a matrix that the risk manager should use to pair threats and assets and determine factors such as the likelihood of each exposure, the computer center's vulnerability to each environmental factor, the impact of each exposure and the cost and effectiveness of proposed safeguards.

The result of the detailed matrix will be an identification of the difference between the loss-prevention benefit and the distributed safeguard cost. "This is the amount of money you save on a particular exposure by installing a loss-prevention measure (or combination, as the case may be), according to the report.

The risk manager can use this information to advise his client about which controls to install to get the most protection for the money and to recommend priorities of installation to realize these gains as quickly as possible, the report concluded.

"Risk Management for Computer Security Managers" is available from The University of Western Ontario's Department of Computer Science, London, Ont., Canada N6A 5B9. There is a photocopying charge of 10 cents per page.

'ABR' Backup Package Updated

CLIFTON, N.J. — Version 4.6 of Innovation Data Processing, Inc.'s Automatic Backup & Recovery (ABR) package was announced here by the company.

Features of ABR include support for IBM 3375 and 3380 disk drives, migration between unlike volumes, data set validation, support for data facility/device support and performance improvements.

ABR Version 4.6 has added simulation reports, a scratch report, wasted space reports, aging reports and reports on data set utilization by user ID.

It also reportedly provides archive criteria by group ID, password and resource access control facility protection, tape specification, scratch catalog maintenance and pre-staging, according to the vendor.

ABR Version 4.6 is available as an option to the vendor's Fast Dump Restore product.

The one-time charge for one CPU for ABR Version 4.6 is $5,000. Maintenance is available for $500 after the first year, the vendor said from 970 Clifton Ave., Clifton, N.J. 07013.

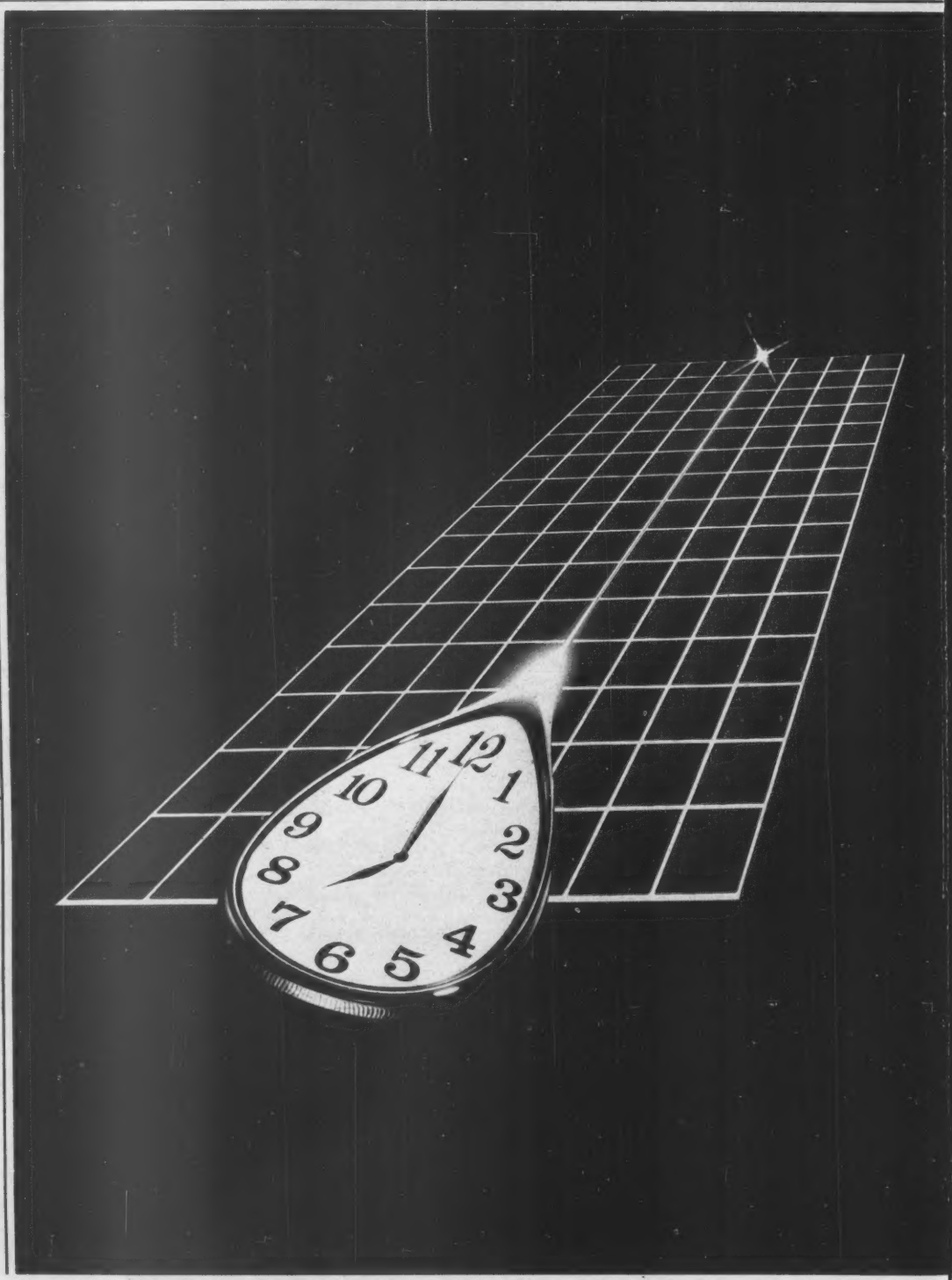
NEW LIFE FOR 1401 PROGRAMS

CS-TRAN converts your 1401 *object* programs to COBOL for the mainframe or mini of your choice.

CS-TRAN is the *only* translator that accepts your object programs, patches and all, yet allows you to include actual COBOL paragraph names and record definitions.

If you'd like more details about new life for your 1401 programs just call or write Russ Sandberg.

C-S Computer Systems Inc.
90 John Street, New York, NY 10038
212-349-3535



For Multisystem Sites

Scon Handles IBM MVS

PITTSBURGH, Pa. — Duquesne Systems, Inc. has added Superconsole (Scon) to its family of shared-device management products for use in multisystem environments on all levels of the IBM MVS operating system.

Scon reportedly will provide a single console image with the capability of taking console messages from multiple systems and merging them together to create a single stream on one or more designated consoles.

The Scon user can specify which consoles are to receive which types of functional messages from any system in the complex, the vendor said. This is said to allow for the operation of all systems from one console, as well as to determine the impact of resource usage on one system as it relates to the performance of other systems.

The Scon price in a two-CPU site is $7,000. The price of the product for an unlimited number of CPUs is $10,000, the vendor said from Suite 622, Two Allegheny Center, Pittsburgh, Pa. 15212.

Resource Management Tools Out for IBM Installations

NOVATO, Calif. — Tomark, Inc. here has released two software packages designed to aid medium and large IBM installations in resource management.

The first product, Pack-AID, is a planning, management, enforcement and forecasting tool for direct-access space. It reportedly enables users to create a direct-access storage device (Dasd) plan and then measure how effectively the plan is being followed.

Other features of Pack-AID include the ability to reserve future disk space without actual allocations; the use of expiration dates on disk data sets without any operator console overhead or intervention; planning, preallocation and reporting on future disk drives before they are physically present; referencing data sets by accounting information; and reporting on Dasd volumes that are not mounted or on-line.

Pack-AID reportedly can be installed on any VS1, VS2 or MVS system using Vsam. It runs as a batch program and is said to require no system modifications. A permanent license costs $2,975.

The second product, JES2-AID, is described by the vendor as a JES2 tuning and performance monitoring system. It reportedly measures internal JES2 usage, as well as MVS resources used by JES2. It was designed for monitoring changes such as JES2 modifications and user modifications to JES2.

The package also aids in the implementation of user modifications and in problem determination, Tomark said.

JES2-AID runs as a TSO command processor, a started task or as a batch job, the vendor said. Some of the reports available from JES2-AID are buffer utilization, processor activity, spool statistics, paging and resource wait.

JES2-AID is parameter-driven and requires no system hooks or changes to JES2 code, according to the vendor. A permanent license costs $1,975.

The vendor is located at Suite C-1, 250 Bel Marin Keys, Novato, Calif. 94947.

Introducing, for PDP-11 RSX, RSTS/E, and RT-11 users

Pascal-2®

The Time Machine

The First Dimension: Performance

Pascal-2 performs.

Pascal-2 programs run as fast as FORTRAN IV-PLUS programs—or faster. (FORTRAN IV-PLUS is Digital's fastest PDP-11 high-level language.) Pascal-2 code is as small as code generated by any Digital PDP-11 compiler or interpreter—or smaller. And Pascal-2 typically compiles at 1000 lines per minute.

The Second Dimension: Structure and Portability

As a programmer, you can write in a language close to your thoughts. With Pascal's structured methods, you can do the job right the first time. It's easier to *design* in Pascal than it is to *debug* in FORTRAN, assembler, BASIC, or COBOL.

As a software manager, you will see the value of Pascal in improved communication among team members: they can understand one another's code. Pascal's portability will protect your software investment: your programs will outlive your current hardware.

The Third Dimension: Tools, Tools, Tools

The compiler precisely reports typographic or syntactic errors. The interactive, source-level debugger helps detect deep-rooted logical errors. The profiler helps identify code that can be rewritten to speed program execution. Also included are formatters, index generators, and documentation aids—a total of 70,000 lines of Pascal code.

Our 2,000 customers use Pascal for such diverse applications as general ledger and payroll, integrated circuit design graphics, word processing, typesetting, and off-track betting; for trimming integrated circuits, monitoring particle accelerators, real-time ballistics modeling, and controlling saws in a lumber mill.

The Fourth Dimension: Our Past and Future

The core of our technical group has been together more than a decade. Our Pascal-1 compiler entered commercial use in 1975. Before releasing our PDP-11 product, we delivered Pascal-2 under contract to two major computer manufacturers for three different processors. Now we're moving Pascal-2 to Motorola's MC68000, to Digital's VAX-11, and to the UNIX operating system. We're committed to Pascal for the long term.

Call or write. We'll send benchmark details, a product description, and a free copy of the Pascal-2 manual (specify RSX, RT-11, RSTS/E).

PDP, VAX, RSX, RSTS/E, RT-11, and FORTRAN IV-PLUS are trademarks of Digital Equipment Corporation. MC68000 is a trademark of Motorola Inc. UNIX is a trademark of Bell Laboratories.

Pascal-2: The Dimensions of Performance

Ask for a free 18" x 24" poster of this photograph.

Network Computer Services
6 Cunningham Street
Sydney 2000, Australia
Telephone: 211-2322
TLX: 25523

Valley Software, Inc.
6400 Roberts Street, #390
Burnaby, BC Canada V5G 4G2
Telephone: 604-291-0651

Hourds Computing, Ltd.
7-8 Mill Street
Stafford ST16 2AJ, England
Telephone: 0785-44221
TLX: 36540

Real Time Products
1 Paul Street
London EC2A 4JJ, England
Telephone: 01-588-0667
TLX: 884971

Rikei Corporation
1-26-2 Nishi Shinjuku
4316 Shinjuku-ku
Tokyo 160, Japan
TLX: 24208

AC Copy
Kurbrunnenstrasse 30
D-5100 Aachen
W. Germany
Telephone: 0241-506096
TLX: 832368

Periphere Computer Systems GmbH
Pfalzer-Wald-Strasse 36
D-8000 Munchen 90
W. Germany
Telephone: 089/681021
TLX: 523271

Oregon Software
2340 S.W. Canyon Road
Portland, Oregon 97201
(503) 226-7760
TWX: 910-464-4779

PURE DEC

50HZ PDP 11/70 (unused)
RWP06-AB (unused) DZ11-A(C)
512Kb MOS
$86,000

PDP 11/70 (unused)
RWM03 RM03
512Kb MOS DZ11-A(C)
$79,000

RSX11D
PDP 11/45 (used)
FUP04 RP04
256Kb DZ11-A(C)
$39,000

PDP 11/44 (unused)
FUM02 (unused) TS11
128Kb MOS
DZ11-A(C)
$58,000

RT11
PDP 11/34A (used)
RL11 RL01
128 Kb DZ11-A(C)
$21,500

GUARANTEED ELIGIBLE
FOR STANDARD DEC MAINTENANCE

Carl R. Soukup & Assoc., Inc.
Specialists in Digital Engineering
408/727-2668 Telex 172337

3274 & 3276 USERS: RAYTHEON GROWS.

ONLY RAYTHEON KEEPS ADDING POWER TO MAKE YOUR 3270-TYPE TERMINALS INCREASINGLY PRODUCTIVE.

There are many suppliers of 3270-type terminal systems. But only one delivers a whole lot more than 3270 emulation. Raytheon Data Systems.

Raytheon terminal systems are designed to grow to provide many enhanced functions within your 3270-emulation network. Today you can add response time statistics, operator productivity aids, and display-attached printers. Tomorrow: local format storage, word processing and distributed data processing. So a PTS-2000 decision now is a long-term investment for requirements far beyond 3270 emulation.

Add extraordinary expandability to the low cost, fast delivery and impeccable reliability you get with every Raytheon terminal, and the result is an unbeatable combination. For today's needs—and tomorrow's.

Find out more about the PTS-2000, the better emulation alternative. From Raytheon Data Systems, a division of the $5-billion Raytheon Company. Call 800-343-6676 (in Massachusetts 617/762-6700 Ext. 608), or send us the coupon.

RAYTHEON

RAYTHEON DATA SYSTEMS
1415 Boston-Providence Turnpike
Norwood, Massachusetts 02062

THAT'S WHY RAYTHEON IS #1*

Tell me more about the PTS-2000.

Name _____ Title _____ Company _____ Street _____ City _____ State _____ Zip _____ Telephone _____

*Among independent 3270-compatible equipment suppliers, according to International Data Corporation.

Displayed Graphically

VRX Tool Shows Performance Stats

DAYTON, Ohio — NCR Corp. announced VRX-Stats, a package designed to enable users of its Virtual Resource Executive operating system to display graphics representations of real memory and CPU utilization on a CRT screen.

VRX-Stats consists of two programs, Memstat and Cpustat. Memstat reportedly is a multitasked job that periodically samples real memory and displays sampled data in any of four formats.

The second program, Cpustat, is described as a multitasked job that produces any of six displays relating to CPU utilization in response to parameter cards or unsolicited operator requests.

VRX-Stats is available for any V-8000 series system that has at least one NCR 796-201 or 796-401 CRT terminal with graphics capabilities. The one-time license fee for the software is $300, the vendor said from 1700 S. Patterson Blvd., Dayton, Ohio 45479.

'Surcharge' Costing Package Designed for NCR's VRX Users

CINCINNATI — Recon Systems, Inc.'s Surcharge, a management tool for NCR Corp. hardware running under VRX, is available from Software Clearing House here.

Surcharge was designed to calculate costs for computer jobs based on usage of elapsed time; CPU time; disk I/O, tape I/O, print lines, cards read and job setup time. Discounts can be applied for non-prime-time usage, the vendor said, and the software proposes charging schemes that would achieve a desired level of profitability, based on past operating costs and usage statistics.

The package is said to provide a three-level accounting structure to handle complex corporate or client structures. Every VRX job can be assigned to a cost center based on job name, job ID or account number without revamping already established job naming standards, the vendor said.

A perpetual license for Surcharge is available for $1,500. The software also can be obtained on one-month to three-year leases, with monthly charges ranging from $100 to $65. The users must purchase the Recon Systems base module for $700 before obtaining Surcharge.

Software Clearing House is located at 771 Neeb Road, Cincinnati, Ohio 45238.

'Speededit' Fits HP 3000

IRVINE, Calif. — Bradford Business Systems, Inc. has announced Speededit, a full-screen editor for Hewlett-Packard Co. HP 3000 processors.

The package allows HP 3000 users to use HP terminals without using the block mode. Other features include insert and delete character, insert and delete line and cursor control using standard keys, the vendor said.

Copy and move operations are all key driven.

Speededit costs $3,500 and is available from Bradford Business Systems at 4920 Barranca Pkwy., Irvine, Calif. 92714

Subroutines In Fortran Implement DES

PRINCETON, N.J. — The Princeton Software Co. has introduced a collection of Fortran subroutines to perform general-purpose data encryption/decryption. The Data Security Facility (DSF) implements the Federal Data Encryption Standard (DES) in a set of interfaces and features speed and portability.

DSF is available for machines of any word length and any internal representation and does not require floating-point operations. DSF can perform a 64-bit encryption or decryption in 2.1 msec as compared to 10 msec to 100 msec for other software implementation, the firm said.

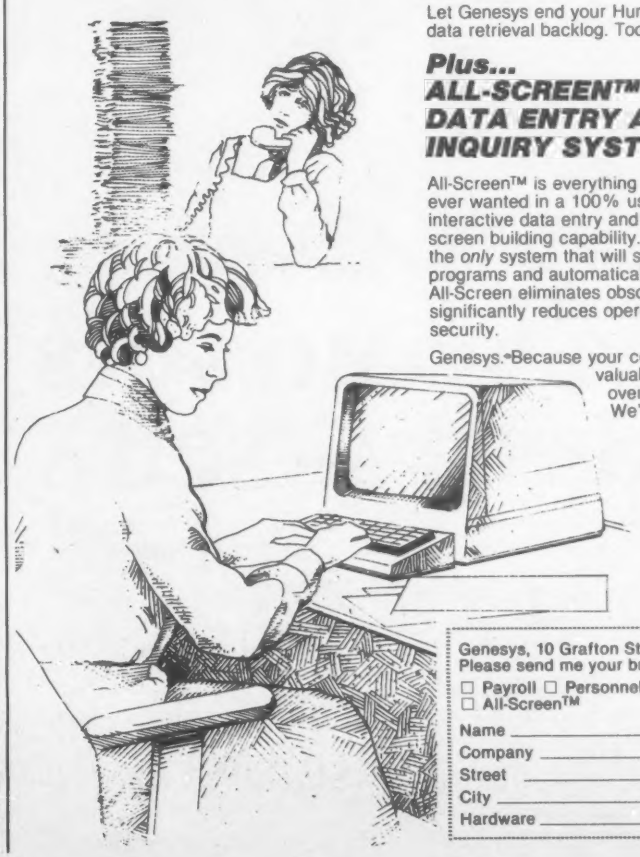
The DSF software is available for any CPU with a Fortran compiler and is offered on a perpetual source license basis for $2,500 or for $200/mo from the DSF manager, Princeton Software, P.O. Box 1317, Princeton, N.J. 08540.

'You Can't Expect Correct Data When Venus Is Descending and Mars and Jupiter Are in Conjunction.'

TODAY'S THE DAY.

FOR GENESYS HUMAN RESOURCE MANAGEMENT SYSTEMS.

Today's the day you can *completely* automate with the most comprehensive, sophisticated Human Resource Management applications software ever available:



GENESYS PAYROLL
GENESYS PERSONNEL
GENESYS BENEFITS MANAGEMENT

Genesys software is custom-generated to meet your company's existing *and* future needs. Modular and open-ended to provide unexcelled versatility and flexibility, with complete security and automatic triggering that forwards entered data across all cross-referenced data bases. Guaranteed to meet all U.S. and Canadian government (ERISA, OSHA, IRS, EEO) requirements — even as they change. Time proven design that responds to personnel administration inquiries, management information requests and government compliance reports. All at the touch of a button, in seconds.

Let Genesys end your Human Resource programming and data retrieval backlog. Today.

Plus...
ALL-SCREEN™ DATA ENTRY AND INQUIRY SYSTEM

All-Screen™ is everything your Human Resource Department ever wanted in a 100% user-friendly, terminal-oriented interactive data entry and inquiry subsystem with unlimited screen building capability. Genesys CICS-based All-Screen is the *only* system that will support multiple Human Resource programs and automatically integrate *all* employee data. All-Screen eliminates obsoleting turnaround documents and significantly reduces operator training, without sacrificing security.

Genesys. Because your company's employees are its most valuable asset. If your company has over 500 employees, call us. We'll make your day. Today.

Genesys
SOFTWARE SYSTEMS, INC.

10 Grafton St.
Lawrence, MA 01843
(617) 685-5400

Genesys, 10 Grafton St., Lawrence, MA 01843 AT-2
Please send me your brochure on these Genesys packages:
☐ Payroll ☐ Personnel ☐ Benefits Management
☐ All-Screen™

Name _____ Title _____
Company _____ Telephone _____
Street _____
City _____ State _____ Zip _____
Hardware _____

Health and Safety System Designed for System/38

VALLEY FORGE, Pa. — Universal Systems Services, Inc. has introduced Ethos, an occupational health and safety information system designed to run on the IBM System/38. Ethos is an interactive, modular, menu-driven system designed to monitor exposures to potentially harmful substances in the work place.

Designed by occupational medical consultants Stewart-Todd Associates, Ethos is organized into four on-line interactive modules covering the following functions: personnel/administrative, medical, industrial hygiene and industrial safety, according to the vendor.

The data base provides an early indicator of occupational disease, the company said.

Ethos is available for purchase at $160,000 from Universal Systems Services, P.O. Box 483, Audubon, Pa. 19407.

System/34 Tool Simulates RPG-III

CONRAD, Iowa — A software package designed to give the IBM System/34 user many of the features and functions of RPG-III has been introduced by BPS Information Services, Inc.

RPG-II½ reportedly doubles or triples programmer productivity by eliminating the input and output specifications for disk files and workstation screens, supporting structured programming operation codes and providing a data dictionary.

A 60-day trial package is available for a charge of $10. A perpetual license costs $950 from the firm at P.O. Box E, Conrad, Iowa 50621.

IBM Farm Management Packages Released For Datamaster Users

ATLANTA — Three packages designed to help farmers manage their operations more economically were released here by IBM for use on its System/23 Datamaster small business computer. The programs are the Farm Management Accounting System, the Dairy Herd and Health Management System and the Crop Costing System.

The first two are being offered by IBM through a nonexclusive marketing agreement with their developer, Farm Management Systems of Mississippi, Inc. Support also will be provided by that firm until Feb. 26, 1984.

The Crop Costing System, which reportedly enables a farmer to track the actual cost of production and calculate the break-even price at any point, is an IBM field-developed program. It carries a one-time fee of $2,000 and is available currently, the vendor said.

The Farm Management Accounting System provides farmers with basic payroll, accounts payable, accounts receivable, general ledger and straight-line depreciation analysis. It will be available Feb. 26 for $3,000.

The Dairy Herd and Health Management System package, which allows a dairy farmer to maintain a current record of a herd, also will be available Feb. 26 for $2,000.

IBM can be contacted for further information at P.O. Box C-1645, Atlanta, Ga. 30301.

System/23 Gets Screen Debugger

SALT LAKE CITY, Utah — Software Clearinghouse, Inc. has introduced the Screen Development Aid (SDA), which it claimed reduces by up to 90% the time required to produce debugged full-screen input/output for the IBM System/23 Datamaster.

The user enters the desired screen from the keyboard of the System/23 as it is to appear in the program. SDA then generates the necessary constants, variables, dimensions and the functions necessary to use them.

The code may be merged with the user's program where the SDA function calls are specified to produce the desired results, according to the vendor.

SDA can be licensed for $400 from Software Clearinghouse, Inc., Suite 100, 2290 E. 4500 South, Salt Lake City, Utah 84117.

System/34 Gets User's Aid

GLENDALE, Calif. — Monday Night Software is offering a software product that is a System/34 user's aid for storing, using and updating operator documentation.

SOS acts as a quick reference to operator instructions. To the System/34 manager, SOS is a one-time generation of explanatory operator tasks that make operator training and cross training easy while allowing for updating. SOS will not interfere with any IBM or custom programs, the vendor said.

The software is available on a 30-day trial and costs $500 from Monday Night Software at First Interstate Bank Building, Suite 301, 535 N. Brand Blvd., Glendale, Calif. 91203.

Our IMS course is in a class by itself.

Now you can learn IMS application programming from instructors who have extensive hands-on experience in IMS/DB (DL/1). No textbook jockeys here. On-Line Software International's instructors have worked in the field. They know the day-to-day problems of programming in IMS. So you learn both the basics and the tricks of the trade.

Our IMS/DB (DL/1) course provides a programmer with all the tools needed to code, debug and execute an applications program accessing DL/1 databases for batch or on-line (CICS/VS or IMS/VS) systems.

Call Linda Morales for more information or to enroll in this or any other On-Line Software International course.

CALL TOLL FREE 800-526-0272

IMS/DB (DL/1) APPLICATION PROGRAMMING

March 1-4, 1982	New York Area
April 5-8, 1982	Los Angeles
May 17-20, 1982	Chicago
June 28-July 1, 1982	New York Area

ON-LINE SOFTWARE INTERNATIONAL
65 Route 4 East
River Edge, NJ 07661 (201) 488-7770

CP/M Simulator Designed For DEC PDP-11, VAX-11

BERKELEY, Calif. — The Bridge, a CP/M simulator for Digital Equipment Corp. PDP-11 or VAX-11 systems running in RSTS, RSX or Unix environments, has been introduced by Virtual Microsystems.

The Bridge reportedly links DEC computers with microcomputer software running under the CP/M operating system. The vendor said DEC users can employ The Bridge to "create" virtual microcomputers.

The software is an implementation of CP/M on DEC equipment and includes a license to CP/M itself, according to Virtual Microsystems. It reportedly loads on a DEC PDP-11 or VAX the same as an applications program. When a program request is received, the user is given a standard CP/M prompt.

The Bridge is priced at $3,500, the vendor said from 2409 Telegraph Ave., Berkeley, Calif. 94704.

Tool Designed For Novices On DG Systems

THORNWOOD, N.Y. — An on-line data storage/retrieval/inquiry package designed to manage information within Data General Corp. systems without requiring user programming experience was developed by Exact Systems and Programming Corp. headquartered here.

The firm's Database Network Arranger (DNA), which is written in Macroassembler, reportedly relieves the user of concerns with programming languages, file definitions and storage allocation. As a fail-safe, the package includes an automatic data base restoration feature to protect against intentional wipe out.

DNA is said to be readily transportable to any DG computers, including Micro-Nova, Nova and Eclipse series running under AOS, AOS/VS, DOS, Rdos and MP/OS. The vendor said DNA can be used in conjunction with Sceengn, the vendor's interactive screen program generator, as an application development system.

DNA is available either as a turnkey hardware/software system or as a software package. Its pricing ranges from $4,000 to $40,000, depending on the configuration, from the vendor, P.O. Box 115, Thornwood, N.Y. 10594.

'IDS' Extended To Model 15

SANTA ANA, Calif. — Computer Leasing, Inc. (CLI) has extended its Information Display System (IDS) software, which is intended as an alternative to IBM's on-line Communications Control Program for its System/3 series, to the System/3 Model 15.

The package reportedly provides users with on-line screens for inquiry or updating of programs. Editing of the screen also is possible through use of an RPG subroutine.

The IDS software currently is available for use on IBM System/3 Models 8, 10 and 12. The vendor said these users can purchase the new package as part of a general upgrade of facilities to gain increased disk memory and on-line capabilities.

The IDS software is being marketed with the IBM System/3 Model 15 hardware. The basic package sells for $50,000 and includes a System/3 Model 15 B20 with 128K bytes of memory, four 3640 CLI disk drawers (40M bytes each), a 750 line/min printer, 41-2 diskette I/O, an IBM 3277-1 console, CLI on-line interface and CLI on-line software.

CLI is located at 2921 S. Daimler, Santa Ana, Calif. 92711.

T/S System Fits LSI-11, PDP-11

CAMBRIDGE, Mass. — A time-sharing operating system for Digital Equipment Corp.'s LSI-11/23 and PDP-11 systems was announced here by Venturcom, Inc.

Venix is said to be a superset of Bell Laboratories' Unix operating system. It includes C and Fortran 77 compilers, word processing tools, full-screen editors, plotting subroutines and programs, more than 100 command drivers for standard DEC interfaces, documentation and support.

Venix is available for $2,400; delivery is in one week, Venturcom said from 139 Main St., Cambridge, Mass. 02142.

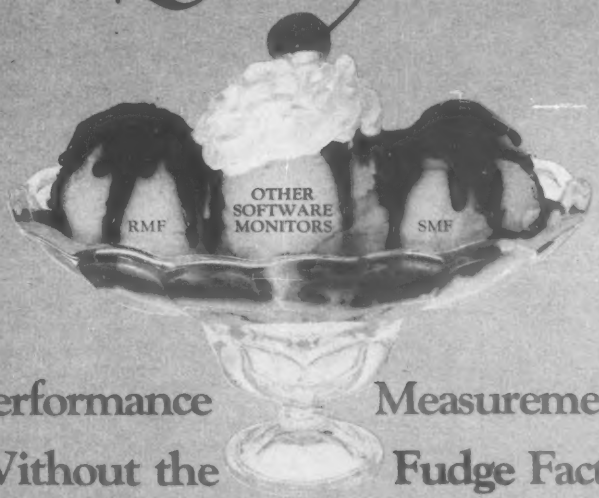
'GRS' Released In Version 1.2

NEW YORK — Enterprise Technology Corp. has released Version 1.2 of its Generalized Reporting System (GRS), a user-friendly, on-line query and report-writing language designed for use with all types of data base systems and file access methods.

GRS operates on Digital Equipment Corp. PDP-11 processors running under RSTS/E. The release is said to include expanded documentation for beginning non-DP users, enhanced table processing capabilities and more data security measures.

A GRS perpetual license costs $8,500 including full documentation and one year of support. The firm is located at 305 Madison Ave., New York, N.Y. 10165.

Duquesne Systems Presents
QCM III



Performance Measurement Without the Fudge Factor

A Better Decision, A Better Choice...QCM

Quantitative Computer Management is the only online and offline software monitor available that does not rely primarily on the inaccurate and incomplete data supplied by RMF, SMF, and MVS control blocks. Whether the term "capture ratio", "extrapolation", or "averaging" is used by our competitors for their products, they are all applying the "fudge factor" principle to RMF and SMF data.

Accurate Measurements
Using event driven techniques, QCM provides accurate and comprehensive measurements of your computer facility. This is in contrast to the other RMF and SMF based software monitors (both online and offline).

Low Overhead
QCM's unique approach to event-driven measurement provides comprehensive measurement data at extremely low overhead. With QCM's SIO Optimizer you can actually gain CPU cycles.

Load Module Installation
QCM is now available for free trial in load module form for easy and quick installation.

Measurement of Bytes Transferred
QCM is the only system that can directly measure the number of bytes transferred at the job, device, channel, and control unit levels. These measurements are ideal for billing, modeling, capacity management, and system tuning.

Systems Performance Interrogator (SPI)
For Real-Time Problem Diagnosis and Reporting
QCM's Systems Performance Interrogator provides dynamic real-time exception reporting facilities and operator displays that enable operators and system tuning personnel to diagnose problems as they occur.

Systems Performance Module (SPM)
QCM's Systems Performance Module utilizes event-driven measurement methodologies to provide most of the benefits of hardware monitors while overcoming the inherent weaknesses of today's sampling-oriented measurement systems.

Job Accounting and Billing (JAB)
For Accurate Repeatable and Defendable Job Accounting
QCM's Job Analysis and Billing is the only system that supplements SMF/RMF data to provide a truly accurate, repeatable, and defendable job accounting and resource management system.

New Product

Program Management Optimizer (PMO)
PMO offers data centers, with an MVS or VS1 operating system, a way to automatically improve system performance. This performance improvement can be realized as a reduction of elapsed time of batch jobs and online transactions. PMO also greatly reduces I/O contention to critical system datasets. These improvements are accomplished by PMO keeping the most active limited directory entries in storage so that when the system work load changes, the contents of the "managed" list changes with it. PMO reports the performance improvement statistics that have been achieved in both online and offline fashion. PMO has already saved many users countless hours spent on unnecessary directory searches. It can provide these same benefits at your installation.

DUQUESNE SYSTEMS INC
TWO ALLEGHENY CTR. PHONE 412-323-2800
PITTSBURGH, PA 15212 TELEX 902 803

To find out why the most knowledgeable D.P. installations rely on DUQUESNE SYSTEMS' Products...

☐ Please send me information on: ☐SPI ☐SPM ☐JAB ☐PMO
☐ Have representative call me

Name
Company
Address
City State Zip
Tel Operating Systems

N.J. Electric Firm Upgrades to 'Relative Security'

(Continued from Page 91)

tempts to use critical data.

Standard methods of protecting information under OS/MVS were evaluated, then discarded, according to Barnes. "After considering all factors we made a make/buy decision based upon the features and cost of commercially available products vs. an internally written package," Barnes said.

The resulting decision was to purchase Cambridge Systems Group's ACF2 package. Valulib, a tape library management package from Value Computing, Inc., also was acquired to protect this storage medium. Other software packages added to Atlantic's security environment are Value Computing's Computacharge job accounting package, which is reviewed for usage patterns and charge-back to users; Pansophic Systems, Inc.'s Panvalet for control of library maintenance; and IBM's IMS data base management system and data dictionary.

"We are beginning a migration into data base structures which will further enhance the level of security we can place on data," Barnes said.

Atlantic Electric has established a comprehensive naming standard to protect data via data set names, Barnes noted. In addition, a library system has been developed to support the concept of separation of duties. Related company security standards include a definition of what programs and data belong to the company, and procedures that are to be followed for modification of programs and their release to production.

The major security responsibility placed upon users of Atlantic's DP system involves passwords and program releases, according to Barnes. The password file is one-way encrypted and a user may change his own password at any time. In addition, programs placed in a production status follow the same basic release procedure whether they are new, enhanced or being used to correct errors.

Biggest Security Problem

The areas within Atlantic Electric's DP system that have caused the biggest security problems have been in the area of systems programming, the use of IBM's Structured Program Facility and the use of card-submitted batch.

The systems programming area has been characterized as the number one potential problem area, Barnes said, because there is constant exposure of data and resources to the systems programmer. "Maintenance of operating system and other systems software guarantees the opportunity to cause security problems, albeit unintentional."

The Structured Program Facility that utilizes a time-sharing option caused the firm problems because users found themselves updating or attempting to update data without realizing what they were doing, Barnes continued.

The problem with card-submitted batch is that a password parameter is required on one of the control cards and if the cards are handled by anyone other than the user and computer production staff, this allows the opportunity for a security breach.

Barnes described Atlantic Electric's current DP system as being "relatively secure." He added, "This system protects us from ourselves and would require a planned attempt by anyone seeking to make an unauthorized access to our system." Future plans in this area involve making the system even more secure while maintaining ease of use and a minimum of rules for its users.

Before the Northrop F-5G gets off the ground, it has to fly on a Harris computer.

Northrop's high performance F-5 tactical fighters are the most widely deployed fighter aircraft in the free world. A refined version of the F-5, the F-5G "Tigershark," will be delivered in 1983.

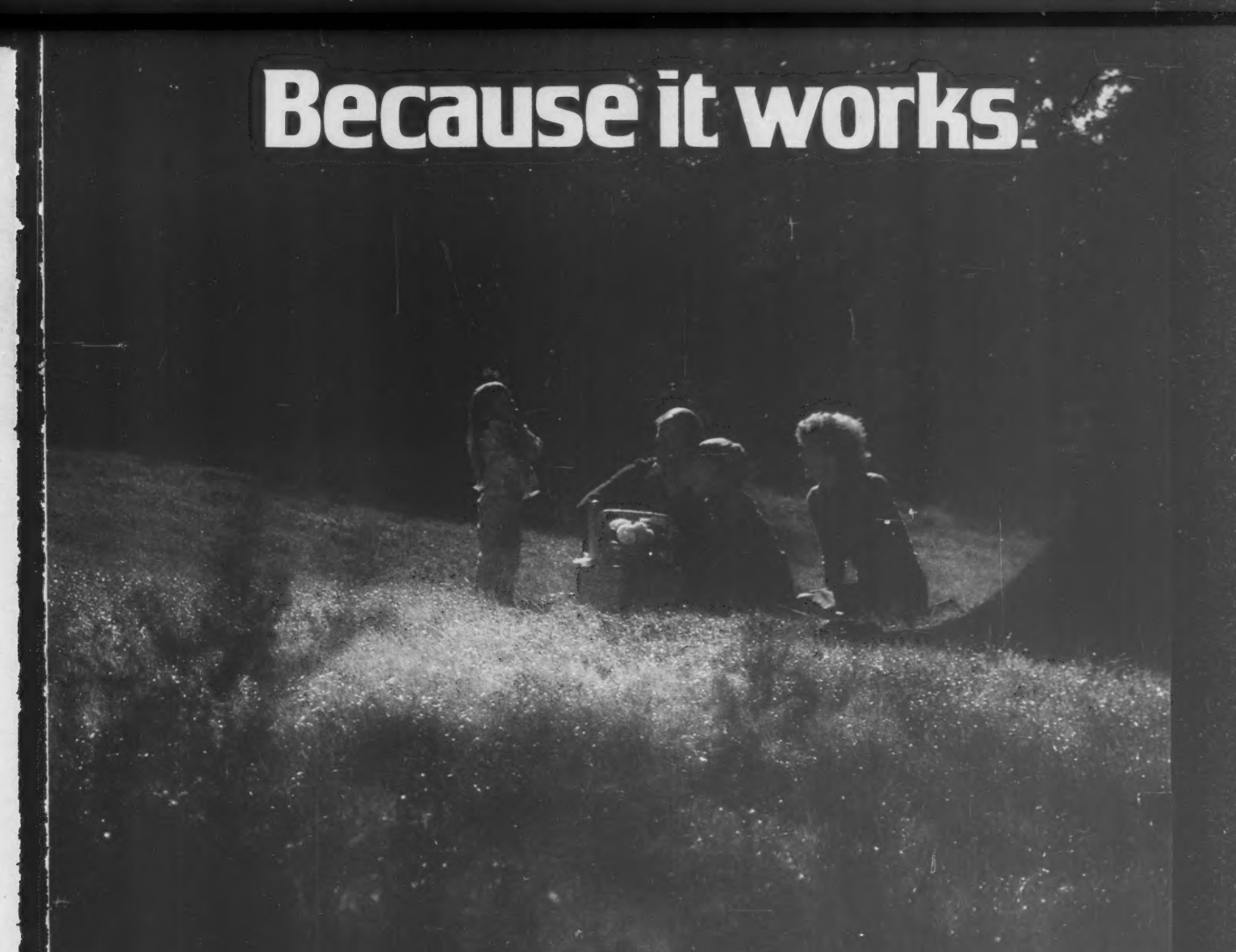
A pair of Harris 800 computers, in concert with twelve other Harris computers, are playing a key role in the development of this aircraft by driving Northrop's two development simulators, as well as being used for interactive program development.

What does Northrop know that you may not? Simply that Harris computers offer the fastest, most powerful and flexible super-mini systems available. Harris computers offer 48-bit system architecture that delivers significantly higher productivity than competitive 32-bit systems.

To arrange a benchmark by our local sales representative, call or write Ralph Mele, National Sales Manager, Harris Computer Systems Division, 2101 West Cypress Creek Road, Fort Lauderdale, Florida 33309 (305) 974-1700.

HARRIS

Because it works.



"Thanks to Epoch 480® computer tape, I can spend my free time with my family–instead of the computer."

People who use Epoch 480 computer tape tell us there have been significant improvements in their company's computer operation after they started using it.

Fewer errors, more throughput and less downtime, just to name a few.

All that talk you hear about Epoch 480 running cleaner and longer is a lot more than just talk.

Epoch 480's modulus of toughness is superior. Its coating is smoother and more uniform. And it does have better signal strength.

Once you've used Epoch 480, we don't believe you'll ever go back to conventional computer tapes.

After all, there's nothing conventional about spending your free time with tape problems instead of with your family.

GRAHAM MAGNETICS

CARLISLE

"I'm Convinced. Only Software International's Financial Packages Meet All Our Requirements."

Software International has sold more General Ledger systems than all of its major competitors combined.

SOFTWARE INTERNATIONAL®

Elm Square, Andover, MA 01810 (617)475-5040

NOW AVAILABLE FOR IBM SYSTEM 38

The World Leader in Financial Management Software

General Ledger and Financial Reporting Accounts Receivable Accounts Payable Payroll/Personnel
Human Resources Fixed Asset Accounting Work Order Management

Atlanta (404) 955-3705	Chicago (312) 298-3500	Dallas (214) 960-0220	Houston (713) 444-3348	New York (914) 253-8050	Montreal (514) 866-5728
Boston (617) 729-8962	Columbus, OH (614) 773-2167	Denver (303) 696-8591	Los Angeles (213) 573-0402	San Jose (408) 292-9700	Toronto (416) 924-1461
					Vancouver (604) 669-6122

International Representatives In: Australia, Brazil, Colombia, Finland, France, Hong Kong, Israel, Italy, Malaysia, Mexico, Netherlands, New Zealand, Norway, Saudi Arabia, Singapore, South Africa, Sweden, United Kingdom

HP 9835, 9845 Desktops Get 'Time Series Analysis'

HUNTSVILLE, Ala. — Time Series Analysis software for the Hewlett-Packard Co. 9835 and 9845 series of desktop computers has been developed by Cyberengineering Corp.

The menu-oriented and prompt-driven Cyberbox & Jenkins Time Series Analysis is said to facilitate the development of Box & Jenkins autoregressive integrated moving average (Arima) stochastic time series models.

The program will allow a univariate time series of up to 500 observations to be transformed, identified, estimated and forecast based on Arima techniques. The program costs $600 from the vendor, P.O. Box 4143, Huntsville, Ala. 35802.

Engineering Graphics Compatible With HP 9845

PALO ALTO, Calif. — A three-module engineering graphics software package compatible with Hewlett-Packard Co.'s HP 9845 desktop computer systems is available from the firm.

Created for electronic-circuit and printed-circuit board designers, HP Engineering Graphics System/45 features general drawing, printed-circuit board layout and schematic drawing capabilities, the vendor said.

The complete package (product number HP 98300A) costs $10,000. Individual modules and the right to reproduce the package are also available. More information is available from the firm's inquiries manager, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

Three Reference Works Available via Time-Sharing

PALO ALTO, Calif. — R.R. Bowker Co. has announced that three reference works will be available through Dialog Information Services Inc.: *Books in Print*, listing recent publications; *Ulrich's*, listing serials on a variety of topics; and *American Men and Women of Science*, listing professionals in the scientific community.

Dialog has established prices at $65/connected hour for *books* and *Ulrich's* with a charge of 20 cents/off-line print. *Men and Women* is $95/connect hour and 40 cents/off-line print.

More information is available from Dialog Information Services, Marketing Depatment, 3460 Hillview Ave., Palo Alto, Calif. 94304.

Graphing System Offered With Four Display Formats

NEW YORK — Mincron SBC Corp. has introduced its Graphic Business Reporter, a graphing system with four optional-display formats and hard-copy printout.

Graphs can be designed for any type of comparative analysis. The system is menu driven and contains help screens and requires no programming, the vendor said.

The package costs $395 from the vendor at Suite 2810, 350 Fifth Ave., New York, N.Y. 10118.

Service Bureau Releases 'Dragon' on National Net

BOULDER, Colo. — Tentime, a service bureau that is based on Digital Equipment Corp. VAX-11 equipment, is offering Compeda, Inc.'s Dragon design-drafting software system on its nationwide network.

The software is available on a three-month trial package basis for $7,000, not including graphics hardware and on an indefinite license basis starting at $24,300, if the user wants to bring the software in-house after the trial period, the vendor said.

The user may also purchase the service through Tentime, 5375 Western Ave.., Boulder, Colo. 80301.

FHWA Develops Program For Traffic Simulation

WASHINGTON, D.C. — The Department of Transportation's Federal Highway Administration (FHWA) has developed a computer traffic-simulation program available free of charge to any city or state.

The Traffic Network Simulation Model reportedly can simulate and analyze traffic conditions on any given section of roadway under any specified condition.

Technical assistance in installing the program is provided under contract. A free loan tape, user's manual and coding forms are available from David Gibson, Implementation Division of the FHWA Offices of Research and Development (HDV-21), Room 6316, 400 Seventh St. S.W., Washington, D.C. 20590.

Health Care Financing Added to CSS Network

DENVER — Computer Sharing Services, Inc. (CSS) has added health care facility financing software to its time-sharing network.

Health is said to help structure bond issues, model cash flows and design around revenue gaps..

CSS can be reached through P.O. Box 231, Denver, Colo. 80201.

Random Notes

"MCBA software on Wang hardware spells SUCCESS from Day One of the installation."
"We have been working with the MCBA packages for years. The application designs are excellent. The programs are constructed using modular techniques which make it extremely easy to customize and modify.
"Each application is fully documented. And the User Manuals are written in English, not 'computerese'!
"The MCBA software on Wang hardware spells SUCCESS from Day One of the installation. That's good business!"
Joanne Snider
President
Citation Computing Systems, Inc.
WANG

MCBA has been a leader since 1974 in providing proven, interactive, user-friendly software. MCBA's accounting and distribution software is installed in over 9,000 user sites on Wang, Digital Equipment Corporation, Texas Instruments, Data General and Hewlett-Packard software.

Join the over 9,000 users and 800 OEMs who have discovered the value of MCBA software.

MCBA Software Moves a lot of HARDWARE

MCBA

Please send me more information on MCBA's Wang Packages:

☐ Payroll ☐ Order Entry/Billing
☐ Accounts Payable ☐ Accounts Receivable
☐ General Ledger ☐ Fixed Assets & Depreciation

Name_____
Company_____
Address_____
City_____
State_____ Zip Code_____
I am an OEM ☐ End User ☐ Other_____
CW 2882

Mini-Computer Business Applications, Inc.
2441 Honolulu Avenue
Montrose, California 91020
Telephone: (213) 957-2900
Telex: 194188

See us at SOFTWARE/expo-West Booth 649

PL/I
for the PDP-11 and VAX
RSX-11, IAS, RSTS/E, VMS
applied information systems, inc.
Box 2584, Chapel Hill, NC 27514
(919) 942-7801

There are two leaders in 32-bit minicomputers.

Perkin-Elmer is the one with the most affordable system ever. Announcing the new 3210.

The new 3210—a complete 32-bit minicomputer system for $49,900.

Perkin-Elmer, the company with the second largest installed base of 32-bit minicomputers, has just set a new pricing standard in the 32-bit marketplace—introducing the new 3210 at $49,900 (U.S. only). Our 3210 competes effectively with 16-bit top-of-the-line systems and offers much more performance.

Just 30 inches high, the 3210 is a complete computing system. Its integrated cartridge disc drive, with both fixed and removable storage, offers complete capability for software distribution, on-line file flexibility, data transfer and system backup. And the 3210 can support up to 32 terminals with provision for field expansion.

You get as much as 4MB of directly addressable memory. And the 3210 runs all our system software including such high-level languages as FORTRAN, COBOL, Pascal, Basic II and RPG II. Application and software development packages, such as UNIX* and RELIANCE, as well as hundreds of third-party application packages can save you time and money.

And Perkin-Elmer offers the high-level service and support you'd expect from a $1 billion, multinational, Fortune 500 company.

There may be two leaders in 32-bit minicomputers. But Perkin-Elmer is the one that gives you the most. In performance. In software. In overall value. Call or write for details.

Perkin-Elmer, Oceanport, NJ 07757.
Tel: 800-631-2154. In NJ 201-870-4712.

We're the one.

*A trademark of Bell Telephone Laboratories, Inc.

PERKIN-ELMER

Sales of Terminals Forecast

Study: Phone Co. Restraints to Be Eased

By Phil Hirsch
CW Washington Bureau

CAMBRIDGE, Mass. — AT&T operating companies ultimately will be allowed to market terminal equipment and computer-based on-line information services, even though they are presently barred from doing so by the Federal Communications Commission's Second Computer Inquiry decision and the antitrust case settlement negotiated last month by Department of Justice and phone company lawyers.

So said the Yankee Group, an often-quoted computer industry research/consulting firm headquartered here, in a recent analysis of the settlement agreement.

The company's main argument is that the agreement not only deprives the Bell operating companies of major sources of revenue, but sharply limits their ability to compensate for those losses. Since the only other alternative is to raise local telephone rates substantially, Congress will be besieged with demands to expand the Bell operating companies' charter.

Under the settlement agreement, the Bell operating companies lose the revenue they now enjoy from leasing terminal equipment and selling Yellow Pages Directory advertising. Moreover, the payments they now receive for providing local exchange service to long-distance carriers could be greatly reduced.

Service Restrictions

Meanwhile, the Bell operating companies "are specifically prohibited from offering anything other than exchange telecommunications," according to the Yankee Group report. "No data processing, no digital voice message service, no speed and protocol conversion will be allowed . . . Their services will be restricted to 'plain vanilla' local transmission — basic and profitable. This will put the [Bell operating companies] in a revenue squeeze between the unprofitable nature of their business and the reluctance of regulators to grant significant rate increases."

But the Yankee Group expects these service restrictions to be loosened. Protests from "the public, the public utility commissions and the operating

(Continued on Page 108)

Introduced by Telex

Color Terminal IBM-Compatible

TULSA, Okla. — Telex Computer Products, Inc. has expanded its line of IBM 3274/3276-compatible terminals with the addition of the Model 279 color CRT terminal.

The 279 is a four-color, plug-compatible replacement for IBM's 3279/2A CRT terminal. Unlike other 3270 terminals, the 279 requires no controller or system changes for displaying alphanumeric data with colored fields.

Key features include a nonglare smear-resistant screen; movable keyboards with single-key clear and program function keys; and optional display performance features such as row and column indicator, keystroke counter and response-time indicator, the vendor said.

The 279 attaches to either a Telex 276 or an IBM 3274/3276 controller. The high-resolution monitor displays up to 1,920 characters on a 9 by 14 dot matrix. An operator-selectable switch enables the terminal to be operated in a two-color mode as a Telex 278 or IBM 3278 equivalent. Fields in this mode are displayed in green for normal intensity and white for high intensity.

The color CRT terminal costs $3,500 from Telex at 6422 E. 41st St., Tulsa, Okla. 74135.

Telex 279

Beehive Terminal Emulates 3278

SALT LAKE CITY, Utah — Beehive International, Inc. has unveiled an Ascii CRT terminal designed to emulate the IBM 3278 when linked to a protocol converter.

The DM78 and protocol converter combination operates under both binary synchronous communications and Systems Network Architecture/Standard Data Link Control protocols.

The DM78 features a compatible 3278 keyboard with 24 program function keys, three program attention keys, 12-key numeric pad and cursor control keys. A 12-in. nonglare screen is standard and a 15-in. screen is offered as an added cost option for those applications requiring larger character sizes to reduce operator fatigue, according to the vendor.

The DM78 costs $1,495 from Beehive at 4910 Amelia Earhart Drive, Box 25668, Salt Lake City, Utah 84125.

Beehive DM78

modems STAND ALONE RACK MOUNT modems

☐ SERIES 302
Bell 103 and 113A Replacement
300 Baud Full Duplex
Features Provided:
• Originate, answer and switchable modes
• EIA and Current Interface
• Carrier Indicator
• Half/Full Duplex Switch

☐ SERIES 212A
Bell 212A Replacement
1200/300 Baud Full Duplex
Direct Connect - No DAA
Each Modem Provides:
• Automatic answer
• Manual Originate
• 8 Status Indicators
• Analog Loopback
• Digital Loopback
• 300 or 1200 Baud

☐ SERIES 330
Bell 103, 113, 201, 202 Replacement
Mix 300, 1200 and 2400 Baud
Direct Connect - No DAA
Automatic Answer
Leased Line

Each Modem Provides:
• Integral Power Supply
• Display of 6 Functions
• Busy Out
• Loopback

PART 68 RULES & REGULATIONS FCC APPROVED

$197 Modem Stand-alone
$837 Modem Stand-alone
$237 Modem Auto Ans.
$137 Modem Leased Line
$147 2 Modem Unit
$297 8 Modem Unit
$497 16 Modem Unit

SEE US AT NCC Booth #836

☐ Acoustic Couplers ☐ Medium Speed Modems ☐ High Speed Modems
☐ Time Division Multiplexers ☐ Frequency Division Multiplexers

Please check items of interest and return to us for additional information

name _____
company _____
street _____
city _____ state _____ zip _____
telephone _____ ext. _____

ComData
We can get you there from here.
7600 N. Nagle Ave. Morton Grove, IL. 60053 (312) 470-9600
New York 212/267-3696
Los Angeles 213/624-0550
Member of IDCMA

Local-Area Net Link Acts as DEC Co-Processor

FREMONT, Calif. — A local-area network data link that incorporates a microprocessor acting as a co-processor to off-load link and network software from a host Digital Equipment Corp. computer has been announced by Standard Engineering Corp.

Called Microlink, the device features multilayered programmable read-only memory embedded software that is said to free the host computer from tasks associated with generating and controlling protocol. In effect, the unit permits a DEC LSI-11 or PDP-11 to communicate by means of an high-level data link control protocol to as many as 255 other stations at distances of up to 30,000 feet. Transmission occurs at a high-speed 1M bit/sec rate down a multidrop line, such as a coaxial cable, a spokeswoman said.

Each Microlink unit employs direct memory access between the data link and its associated Intel Corp. 8086 co-processor CPU and between the co-processor and the host, according to the vendor.

Other features of the unit are noise immunity, X.25 compatibility, an expandable memory and an RS-422 shielded twisted-pair or synchronous modem.

Microlink is priced at $2,995, which includes the link interface, transport layer and protocol handling software. Delivery is in 90 days.

Standard Engineering is located at 44800 Industrial Drive, Fremont, Calif. 94538.

'Draft B' of IEEE Standard 802 Out

SILVER SPRING, Md. — "Draft B" of the IEEE 802 Local Network Standards Committee has been published and is available from the IEEE Computer Society.

Copies of the 400-page document may only be obtained through prepaid orders made payable to the IEEE Computer Society. Requests can be made to "IEEE 802 Draft Standards" with a payment of $12 for nonmembers and $9 for members.

The East Coast IEEE office can be reached through P.O. Box 639, Silver Spring, Md. 20901. Number "905" can also be ordered from the West Coast office, 10662 Los Vaqueros Circle, Los Alamitos, Calif. 90720.

Report Sees FCC Easing Restraints

(Continued from Page 107)

companies themselves will influence" Congress to expand the Bell operating companies' charter in the legislation now being drafted on Capitol Hill.

The operating companies will be able to argue that restricting their activities is discriminating, since independent telephone companies such as General Telephone and Electronics, Corp. (GTE), United Telecommunications, Inc., Continental Telephone Co. and Rochester Telephone Co. "provide local transmission, but are also allowed to offer enhanced services through separate subsidiaries," the Yankee Group report said.

It pointed out that GTE manufactures equipment and offers long-haul transmission through its Telenet subsidiary and United Telecommunications is in the remote time-sharing business, while these two companies plus Continental Telephone own or lease long-distance satellite communications channels.

Labor-Intensive Portion

Although the local operating companies represent "one of Bell's most important sources of economic and political power — since they are the direct customer interface for the 80% of U.S. telephones provided by the Bell system — these companies are also the most labor- and capital-intensive portions of AT&T," according to the Yankee Group.

Its report added that the operating companies account for "approximately 80% of Bell's employees and 80% of the corporation's assets."

Thus, by holding onto Bell Laboratories, Western Electric Co. and computer-based information services, AT&T keeps the most profitable activities," the report explained.

Modem Series Fits Addressable Units

ST. PAUL, Minn. — A series of asynchronous, full-duplex broadband data modems has been announced by Interactive Systems/3M Corp.

The Model 925 series includes the Model 926 head/end unit and the Model 927 remote unit. Initially designed to operate with an RS-232 interface, the units reportedly can be used in direct point-to-point hookups and direct multidrop arrangements with addressable terminals.

In addition, they can be run in a multiple remote configuration when used with the firm's Model 460 data remodulator. The modems cost less than $500 each from Interactive Systems/3M, Department TL81-73, P.O. Box 33600, St. Paul, Minn. 55133.

Depth.

We design standard terminals to meet the world's standard problems. And we design special terminals to meet the world's special problems. It's such a simple concept that it may surprise you to find out that we're just about the only terminal manufacturer in the world that can make that statement.

For over ten years we've been solving customer problems with unique, innovative solutions—usually at a cost not so different from the "not-quite-right" terminals that other manufacturers are trying to sell you.

From our first Model 3311 to our latest Model 100 we've designed over 100 different terminals with functions to solve special problems. And that gives us depth. Of experience. And of vision.

Call or write for some specific information on how we treat specials as standard. Phone: 800-328-6179 or 612-941-3300.

TELERAY
DIVISION OF RESEARCH INC
BOX 24054 MINNEAPOLIS, MINN. 55424

While Dusty Stauffer updates an inventory report (left), Jeff Male shapes a rough cut piece of mahogany that will become the neck of a C.F. Martin guitar. Martin's sales representatives around the country will have terminals in their homes that give them access to all the pertinent sales information in C.F. Martin's data bases.

DP Prevents Guitar Maker From Fretting

Special to CW

NAZARETH, Pa. — While strings, frets, tuning machines and pickguards have little in common with computers and data communications, they are close partners at a factory here that manufactures hand-made guitars.

Since 1833, the C.F. Martin Co. has been making guitars used by such legends as Hank Williams, Johnny Cash and Willie Nelson. Even though the company has grown and employs more than 100 craftsmen, the firm still adheres to its original methods, producing instruments that are shaped by hand and carved by knives and rasps instead of mass-produced by cutting machines and mechanized assembly lines.

However, the old-world company has made at least one concession to 20th century technology. To do its data and word processing, and keep ahead of all the bookeeping and paperwork necessary to keep the business going, C.F. Martin depends upon a Datapoint Corp. Attached Resource Computer (ARC) system.

The firm purchased its first starter Datapoint system in 1980, which consisted of a Model 6600 processor, 20M bytes of disk storage and five Model 3810 applications processors.

But, "when we found out all we could do on the ARC network, we realized we needed more equipment to do more applications. So we added on," Jim Adkins, director of the firm's computer services, explained.

Today, the company has three 6600 processors and one 1800 dispersed processor. Hooked up to the processors for input and inquiry are 20 8200 nonintelligent terminals. The original 3810 applications processors are used for word processing and program development, Adkins said.

In addition to the 20M bytes of storage space that came with the firm's Arcpac starter system, C.F. Martin also has a Datapoint disk drive with two removable packs. It also has a 160 char./sec matrix printer, a 300 line/min band printer, a 45 char./sec letter-quality printer and a high-

(Continued on Page N)

With Cache-Based Subsystem

HP 3000 Access Time Slashed 400%

WESTLAKE VILLAGE, Calif. — Qualex Technology, Inc. has unveiled a fast access cache-based disk subsystem for Hewlett-Packard Co. 3000 computers that can store up to 600M bytes of data and is said to have a data access time 400% faster than existing HP disk systems.

The Group 3000 disk system emulates HP's 7925 disk drive system, but is said to offer up to five times the data storage capacity and four cache storage capacities, ranging from 360M- to 600M bytes. In addition, the system's microprocessor-based controller can support a total capacity of 1.92G bytes of data, a spokesman noted. Seek and latency times on the system are rated at 20.33 msec, he said.

Cache options on the disk include a choice of four internal configurations. The cache hit rate is about 80% to 90%.

The disk system also has dual I/O ports to handle two processors and built-in diagnostics.

The Group 3000 systems -- which were designed for HP 3000 Series 30, 33, 40, 4 and 64 CPUs — are priced from $26,500 to $56,000, depending on storage capacity and options selected. Shipments are scheduled for the first quarter of this year, the spokesman said.

Qualex Technology is located at Suite 111, 31220 Labaya Drive, Westlake Village, Calif. 91361.

Qualex Technology's Group 3000 Disk Subsystem

DEC Peripherals?

And we'll get 'em on their way to you within 24 hours. Exactly what you wanted. At the right price. In time. On time. Every time.

COMPUTER & TERMINAL EXCHANGE

We're The Suppliers

Call us at (904) 434-1

114 East Gregory Street
Pensacola, FL. 32501

Distribution Centers: Pensacola • Springfield (MA) • Phoenix • Birmingham • New Orleans.

We've got'em!

DEC AVAILABILITIES

BA11KE	DLV11J	RX211-BA
DD11CK/DK	RM05-AA	RXV21-BA
DH11AD	RK07EA	TJE16-EA
DL11E	RK711EA	TWE16-EA
DZ11-A,B,	RL02-AK	TWU45-AA
C,D,E,F	RL211-AK	KDF11-AD,HD,
FP11-A	RL01-AK	HF,HH,HK
MS11-LB	RL11-AK	DR11C
MS11LD	RLV21	MR11EA
MSV11DD	RLV11	VT103-AA,BA

DEC is a registered trademark of Digital Equipment Corporation

HP Adds Laser Printer Capable of 45 Page/Min

PALO ALTO, Calif. — Hewlett-Packard Co. has introduced a laser printing system that can reportedly store large quantities of text and business forms in its memory and operate at speeds up to 45 page/min.

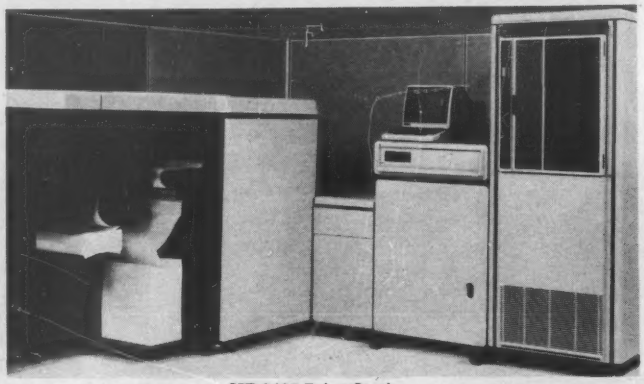
The HP 2685 print station includes an HP 2680 laser printer, an HP 3000 computer, a system console, operating system software, a 65.6M-byte disk drive, a 1,600 bit/in. tape drive and a graphics terminal. The system can store an indefinite number of business forms; print horizontally, vertically, or both; call up different character sets in several sizes; and print on almost any size paper, a spokesman said. A single-processor system can also be expected to produce up to 1.5 million copies/mo.

In addition, the laser-based system cannot only be used to create printed documents, but also can be used for logos, forms, signatures, bar codes and optical character recognition characters. All of these can be designed interactively, on-line, then electronically stored and printed, a spokesman said.

Options for the printer include a second 2680 laser printer, high-level programming languages including Cobol and Fortran, dual-density tape drives and a 120M- or 404M-byte disk drive. The print station can also be upgraded to a distributed processing network, which supports several HP 3000 word and text-processing software packages. In addition, two or more print stations can be strung together to provide redundancy for critical applications, the spokesman noted.

The HP 2685 costs $160,000, with delivery in 12 to 22 weeks from HP.

Additional information on the printer system can be obtained through local HP sales offices.



HP 2685 Print Station

DP Keeps Firm From Fretting

(Continued from Page 109)

speed laser printer.

The Martin Co. uses its ARC network to track the status of each shop order at any time, Adkins pointed out. By doing so it can be determined how much time will be needed to complete the building of a guitar. A costing system generates reports of what each craftsman is working on, how much time is put into each instrument and any special touches such as additional decorative carving, Adkins said.

"The costing factor is important," he added. "It dictates the price of the guitar . . . and tells us which are our most productive, efficient employees."

C.F. Martin has international sales offices in Toronto, Sweden, and a distribution network that reaches Japan, the South Pacific, Europe and Southeast Asia. There are nine salesmen in the U.S. Plans are to eventually have each of these U.S. sales people have a Datapoint 8200 terminal hooked up in their homes for inquiries, Adkins said.

The at-home terminals will communicate with Martin's processors here in Nazareth over a telephone line. Information stored on disk at headquarters will be available to salesmen 24 hours a day, seven days a week. In the past, with the batch-processing system, printed reports were often three to four weeks outdated before they were received, the DP director added.

Information on music stores that sell Martin guitars is also maintained in the firm's computer files. That way, when an inquiry comes in requesting information on where to buy a guitar "we pull up that dealership information, merge it with a word processing document and produce a letter in response," Adkins said.

Since the data and text file structures of the ARC system are compatible, data processing files can be incorporated into word processing and DP functions can be performed on documents created in word processing.

Our new B-1000 helps keep the DP department ahead of a growing demand for printouts. It's the fastest member of our reliable B Series family of band printers.

Like the B-300 and B-600 models, it has Dataproducts' patented Mark V hammer system at its very heart. The system is virtually friction-free. The result is a remarkable level of reliability.

That reliability is proven, too. With over 30,000 units in the field, our B Series printers have become the industry standard for excellence.

Fast and easy.

The B-1000 was designed for high performance, printing up to 1,100 lpm with a 48 character set. It prints out 1,000 lpm with 64 characters and 760 lpm with a 96 character set.

All the B Series were designed with the operator in mind. The long lasting ribbon cartridges are easy to load. The bands can be changed in less than a minute. Sophisticated self diagnostics let the operator identify problems and often correct them without a service call.

The quiet type.

With fully sound-insulated cabinets, the printers operate at only 60 dBA—even less than the noise level of a

With Dataproducts' B-1000™ Band Printer, every department gets what's coming to it.

IDM Data Base Machine Expanded Downward

LOS GATOS, Calif. — A supplier of relational data base management processors has expanded its product line downward with the introduction of a mini- and micro-class machine that reportedly provides up to tenfold greater performance than competing software systems.

The debut of Britton-Lee Inc.'s IDM 200 coincides with the company's announcement of a software support package that permits IDM series machines to be integrated with Digital Equipment Corp.'s PDP-11 and VAX-11 family processors running under the Unix operating system.

Some of the IDM 200's standard features include a data dictionary, audit log, transaction management capability, security safeguards and cash-recovery aid, according to a Britton-Lee spokesman.

Other such features reportedly include stored commands for streamlining data base queries or updates and live backup, which allows a data base to be dumped even as it is being used.

Capable of controlling up to four storage module-type disk units and a Pertec Computer Corp.-compatible tape system, the IDM 200 addresses data bases nearly as large as 3G bytes and supports up to 128 users, the spokesman said.

In typical applications, the system sits between a CPU and its disk units and is dedicated to data base management tasks that would otherwise be performed by a general-purpose processor. CPUs that the system would typically operate with include minis like PDP-11s, the IBM Series/1, Data General Corp.'s Eclipse family members and Hewlett-Packard Co.'s 3000 series machines. The IDM 200 also reportedly operates with microcomputers like the Data General Micronova processors and Zilog, Inc.'s System 8000.

Through its RS-232 serial ports, the system supports anywhere from one to 24 microcomputers simultaneously to form a shared, centralized data base resource.

Britton-Lee described the IDM 200 as a low-cost, scaled-down version of the company's existing IDM 500, which reportedly boasts three to tenfold greater performance than its sister system. Both machines hold 512K bytes of main memory in a basic configuration. But unlike the IDM 500, which accommodates up to 5.5M-bytes, the IDM 200 expands to a maximum of only 1M byte.

Though aimed primarily at OEMs, the smaller IDM system will also be supplied directly to end users, who will account for an estimated 20% of the machine's total sales, the spokesman said.

Three Products

Roughly the same OEM-end user sales split will also apply to Britton-Lee's IDM support software, which consists of three products that will support:

- VAX-11 series processors running under Unix.
- PDP-11 series processors running under Unix.
- Software updates for any CPU supporting the C programming language.

Each of the three constituent software products, which will be sold under a licensing agreement, include a high-level, nonprocedural query language that reportedly simplifies the process of updating an IDM data base.

A basic IDM 200 costs $35,000, compared to $10,000 for the VAX-11 and PDP-11 versions of the support software and $8,000 for the C compiler systems version.

Shipments of both the IDM 200 and the support software begin on Feb. 1 from Britton-Lee at Albright Way, Los Gatos, Calif. 95030.

typewriter. These cabinets are available on the B-300 and B-600, standard on the B-1000.

A name you can trust.

Dataproducts is the world's largest independent printer manufacturer. For 19 years, we've built printers for the biggest OEMs in the business, putting their names on our machines. These customers make sure our printers live up to some pretty tough standards.

Now our B Series band printers are available with our name on them. Or with your name.

We're here to help.

We have distributors and sales representatives throughout the world.

We'd love to show you how our printers can improve your systems.

Call for more information. Or write our Marketing Department at 6200 Canoga Avenue, Woodland Hills, CA 91365. Telephone: (213) 887-8451.

European Marketing Headquarters:
Egham, Surrey, England
Tel: Egham 784-31161
Telex: 298562

Dataproducts

Tandem Nonstop Gets Peripherals

CUPERTINO, Calif. — Tandem Computers, Inc. has introduced four peripherals designed to operate with its Nonstop transaction-processing computer systems.

The first is a sealed-module Winchester disk drive that offers up to 128M bytes of formatted storage singly or 256M bytes of data space in a dual-drive configuration. The Model 4110 is a medium-range product that fits between the firm's 64M-byte and 240M-byte removable disk drives. The 4110 costs $19,500, including a cabinet, while the 4111 add-on unit costs $16,500.

The second group of peripherals introduced for the firm's fail-safe computer systems include a high-speed matrix printer and two band line printers.

The 5520 high-speed printer has a dual-matrix print head and can output up to 340 char./sec or about 200 line/min. The 5513 and 5514 band line printers offer print speeds of 600 and 900 line/min, respectively, and have user-interchangeable character bands that can contain up to 192 characters.

The 5520 costs $5,000, the 5513 costs $14,000 and the 5514 is priced at $20,000. All of the printers are supplied with acoustic cabinets as a standard feature. The peripherals are available for immediate delivery, the spokeswoman noted.

Tandem is located at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

THE MOST POPULAR PHENOMENON IN SCIENCE IS AN ECLIPSE.

In the world of science, the best selling class of computers is that of 16-bits.

And in the world of high performance 16-bit computers, our ECLIPSE® S/130, S/140 and S/250 computers are the most popular in science and engineering.

You see, the people who build their systems and applications around our ECLIPSE computers not only recognize a computer with outstanding price/performance ratio. They also recognize what the high technology community needs.

For example, the rich, extensive microprogrammed ECLIPSE instruction set that lets programmers approach applications virtually any which way they want.

The large capacity interleaved memory systems that are coupled with Error Checking and Correction to make memory access both rapid and reliable. (Two attributes not normally associated with each other.)

The ECLIPSE family gives you all sorts of choices. If you need speed and flexibility, the S/130 has an optional Writable Control Store. If you need cost effective, high speed throughput, the S/140 has an optional Burst Multiplexor Channel. If you need expandability, the S/250 lets you grow to 2 MB and add an Integral Array Processor.

As well as our own fast, efficient, reliable operating system (RDOS). Our highly functional, user-friendly, multiprogramming operating system, (AOS). And a full range of computational languages: FORTRAN, BASIC, PASCAL, PL/I, DG/L (our systems programming language), and a complete set of programmer productivity aids.

And of course, the ECLIPSE peripherals. They're all here. Ready to go.

All of which means there is an ECLIPSE which has everything you need for everything you want to do. In medical instrumentation, process control, computer-aided design, automated test equipment, communications or what-have-you.

Of course, all this capability would be for naught were it not for one characteristic of all ECLIPSE computers: you can get them up and running in a hurry.

For more information about ECLIPSE scientific computers write to: Data General, C-228, 4400 Computer Drive, Westboro, MA 01580. Or better yet, call your local Data General Sales Office.

And see what all your colleagues (and competitors) have been seeing in an ECLIPSE.

Data General

We take care of our own.

ECLIPSE® is a registered trademark of Data General Corporation. © Data General Corporation 1981.

Cartridge-Based MSS Stores 55G Bytes

SUNNYVALE, Calif. — A cartridge-based mass storage device said to have a storage capacity of 55G bytes has been introduced for end users by Masstor Systems Corp.

Aimed at medium to large-scale computer systems users, the on-line M860 mass storage system (MSS) has a honeycomb-like M861 storage module at its core made up of cells that hold 316 3.5-in. video cartridges, each with 175M bytes of storage capacity, according to Masstor.

Other major components of the system include the M860 Storage Management Task software (SMT) and the M862 Storage Control, Masstor said.

The M860 system works as though the user's CPU is viewing it as a tape subsystem, Masstor explained. When a file is requested, the SMT software orders the storage module to activate an accessor in the module where the data cartridge resides.

It then removes the data and transports it to a data recording device for reading and storage. Any new or modified data is also placed on a data cartridge and returned to its cell.

Masstor claims that because the CPU thinks the M860 is a tape subsystem, conversion is simple. The company said that data can be processed in tape mode directly or staged to a disk for processing, the company said.

Optional features for the M860 include a second data recording control and a dual data path option within the storage control. Redundant maximum configurations of the system with eight storage modules and two storage controls is also possible, Masstor said. Multiple systems can be attached to a single CPU or shared, the company added.

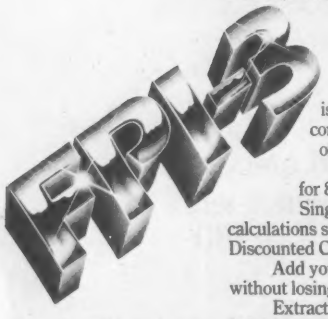
While Masstor is targeting the system to users of IBM plug-compatible mainframes, it is also available to OEMs and users with multiple-like or -unlike host computers via the company's Shared Virtual Storage System.

The company added it has completed an OEM agreement with Control Data Corp. that allows for possible use with CDC's large systems. The first M860 system under the agreement was shipped last December, Masstor said.

Availability of the system is slated for the second quarter. Pricing starts at $450,000. More information is available from the vendor, 541 Lakeside Drive, Sunnyvale, Calif. 94086.

VISICALC™ ON IBM/34?

Introducing FPI-3, the quantum leap in financial modeling tools.



Designed for the power and endowments of a full mini-computer, FPI-3 is a menu-driven 'electronic worksheet.' FPI-3 extends the VisiCalc *program* concept into a true financial modeling *system*. FPI-3 has features and capabilities of sophisticated modeling and planning systems, yet at a fraction of the cost.

Giant models created in a flicker: 96 columns by 10,000 lines. Ideal for 8 year, monthly-segmented financial models for entire companies.

Single Key Formula Library™ offers 35 standard financial formulae. Complex calculations such as Internal Rate of Return, Depreciation, Least-Squares Projections, and Discounted Cash Flows are single key functions.

Add your own formulae to our standard menu of calculations. Customize your models without losing performance or ease of use.

Extract key financial data from application data bases. Pull important data from your ledger, payables, receivables, and asset accounting modules in seconds.

Designed for the non-technical manager. Extensive, multi-level help messages make it very easy to use.

Even write your own on-screen messages. This allows you to document any model precisely so your staff learns quickly.

ORDER NOW!

At $1500 per copy, it's a bargain. You'll save that much in document preparation and filing if done manually.

We think you'll rave about FPI-3 from the very first day you get it. And to make it easy for you to get, we are offering a 1 Month Evaluation Rental for a mere $150. It's deductible, of course, from the purchase price. Manuals are $15.

Ask about FPI-1 and FPI-2, more powerful tools for the IBM34.

*VisiCalc is a trademark of Personal Software, Inc.
*FPI-3 is a trademark of Fusion Products International

FUSION PRODUCTS INTERNATIONAL

317 Miller Avenue Mill Valley, California 94941 USA
Telex 172 029 SPX SRFL (415) 381-1340

Bits & Pieces

Plotter Interface Offered

ANAHEIM, Calif. — California Computer Products, Inc. has announced an electrostatic plotter controller/interface for the firm's computer-aided design systems.

The hardware-firmware package reportedly offloads the CPU of Calcomp's IGS-500 or IGS-400 standalone systems. It sorts and generates plots on up to two elecrostatic plotter/printers of varying widths and resolutions, according to the vendor.

With a basic memory capacity of 48K words, the unit costs $19,500. Delivery is in 120 days, the vendor said from 2411 W. La Palma Ave., Anaheim, Calif. 92801.

Quick-Check Printer Out

WEBSTER, N.Y. — Photographic Sciences Corp. has announced the Quick-Check Printer, designed for use with the firm's Quick-Check 100P bar code reader.

The unit provides a decode and tolerance record for scanned bar code symbols. The unit will print the type of code, the magnification, a decode of the symbol and diagnostic quality information, the vendor said.

The printer costs $495. The combined printer and 100B bar code reader costs $1,500. The vendor can be reached through P.O. Box 338, Webster, N.Y. 14580.

Impact Printer Available

SAN FERNANDO, Calif. — Axiom Corp. has unveiled an impact printer with one print hammer, the GP100. It uses standard, fanfold paper and allows dot graphics, alphanumeric characters and double-width characters to be mixed within a single line. It prints 30 char./sec and can be used on a minicomputer, microcomputer or mainframe, according to the vendor.

The GP100 uses a rotating platen with protruding lengthwise splines, positioned behind the paper.

The character or graphics image is formed by multiple hammer strikes as the print head advances across the paper in front of the rotating platen, according to the vendor.

The GP100 is priced at $389 from Axiom Corp., 1014 Griswold Ave., San Fernando, Calif. 91340.

Power Switch Unveiled

CAMARILLO, Calif. — Power-One, Inc. has announced the SN series of high-frequency switching power supplies.

The SN series offer the user up to 600W of power. Other features include a power density ratio of 1.8W cubic in. and a hold-up time of 20 msec. Brownout protection is standard, and the unit provides immunity to ac line transients and disturbances according to the vendor.

The unit costs $595 from the vendor, Power One Drive, Camaraillo, Calif. 93010.

Please send me COMPUTERWORLD for one year. RATES: United States—$36; Canada, Central & South America—$65
Europe and Near East—$125; All Other Countries—$175 (Airmail Service)

☐ Check Enclosed
☐ Am Ex ☐ BA/Visa ☐ MC (MC Only - List four digits above your name)

If charge we must have cardholder's signature: _____ Expiration Date: _____

First Initial		Middle Initial		Surname	
Your Title					
Company Name					
Mail To:					
City			State	Zip Code	

Address shown is:
☐ Business
☐ Home

☐ Check here if you do not wish to receive promotional mail from *Computerworld*.

☐ Check here if you're interested in receiving information on *Computerworld's* Index.

PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY

BUSINESS/INDUSTRY
10 Manufacturer of Computer or DP Hardware/Peripherals
20 Manufacturer (other)
30 DP Service Bureau/Software/Planning/Consulting
40 Public Utility/Communication Systems/Transportation
50 Wholesale/Retail Trade
60 Finance/Insurance/Real Estate
70 Mining/Construction/Petroleum/Refining
75 Business Service (except DP)
80 Education/Medicine/Law
85 Government - Federal/State/Local
90 Printing/Publishing/Other Communication Service
95 Other: _____

TITLE/OCCUPATION/FUNCTION
11 President/Owner/Partner/General Manager
12 VP/Assistant VP
13 Treasurer/Controller/Finance Officer
21 Director/Manager of Operation/Planning/Administrative Service
22 Director/Manager/Supervisor DP/MIS Srvs
23 Systems Manager/Systems Analyst
31 Manager/Supervisor Programming
32 Programmer/Methods Analyst
41 Application Engineer
42 Other Engineering
51 Mfg Sales Representative
52 Other Sales/Marketing
60 Consultant
70 Lawyer/Accountant
80 Librarian/Educator/Student
90 Other: _____

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

CIRCULATION DEPT. 375 Cochituate Road, Rte. 30, Box 880, Framingham, MA 01701-9985

Detach here, fold, and place in post-paid envelope attached through binding.

. . . the one weekly newspaper that's designed to fulfill your unique "need to know" . . . the one newspaper that can give you all the current information you need to benefit you, your organization and your career progress . . . 52 weeks of incisive news, commentary and special reports . . . subscribe today, use the attached postage paid order form.

☐ Please enter my subscription
(details on back)

☐ I'm already a subscriber, but I'd like you to change my:
- ☐ address
- ☐ title
- ☐ industry
- ☐ other

My current mailing label is attached and I've filled in new information on the other side

Put old label or label information here

COMPUTERWORLD

Memory Unit Can Be Used By Four LSI- Or PDP-11s

HUNTINGTON BEACH, Calif. — Ranyan Computer Enhancement Systems, Inc. has introduced a shared memory subsystem that permits linking up to four Digital Equipment Corp. Q-bus or Unibus computer systems.

The MSM-1 subsystem basically allows memory blocks from 4K- to 64K bytes in size to be shared by any combination of two to four DEC LSI-11 and PDP-11 computers. The computers can send up to two vectored interrupts to any other computer in the network as well as simultaneously broadcast interrupts to all computers in the configuration.

The system's shared memory electronics reside on an eight-quad board backplane housed in a rack-mountable 19-in. box. The subsystem connects to participating computers via 50-ft-long shielded cables.

The shared block of memory provided by the MSM-1 can reportedly be mapped at different addresses for each of the computers sharing it, a spokesman said. The mapping includes 18 bits of address for Unibus computers and 22 bits of address for Q-bus systems.

Unlike conventional direct-memory access links, the Ranyan subsystem allows data updated in one processor to be automatically updated in all the others in the system, the spokesman noted.

The MSM-1 is a fully integrated subsystem. It has a power supply that is hardware compatible with and software transparent to DEC Q-bus and Unibus computers.

The multiuser systems are priced from $25,400 to $27,000, not including the necessary cables. Quantity discounts are available.

Ranyan can be reached through P.O. Box 790, Huntington Beach, Calif. 92648.

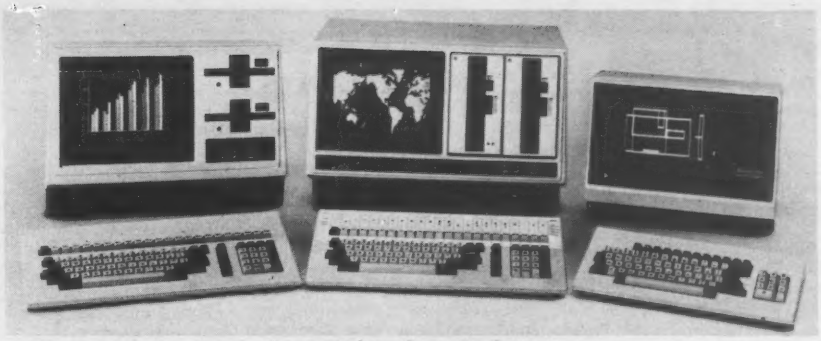
Micros Get Winnie Drive

CAMPBELL, Calif. — Santa Clara Systems, Inc. has announced a 5¼-in. Winchester disk drive for microcomputer-based small business systems and personal computers.

Called Minimega, the unit can be interfaced with most CP/M-based systems. It is available in 5M-byte or 10M-byte configurations and can be integrated with a 5¼-in. 1M-byte floppy disk backup, the vendor said.

A disk controller is included with the drive. The unit costs $3,495.

Santa Clara Systems is at 560 Division St., Campbell, Calif. 95008.



Sanyo Desktop Computer Systems

Sanyo Unveils Desktop Trio

MOONACHIE, N.J. — Sanyo Business Systems Corp. has introduced three desktop computer systems aimed at the small business arena. The systems feature CP/M-compatible software and up to 4M bytes of disk storage.

The MBC-2000, MBC-3000 and FDS-1000 are all produced by Sanyo and have been available in Japan and Europe for the past few years. However, this is the first time the machines are offered in the U.S. market.

They are mainly targeted against micro-based business computers offered by Radio Shack, Apple Computer, Inc. and IBM.

The two top-of-the-line models, the 2000 and 3000, are based on an Intel Corp. 8085 CPU and incorporate Intel's Multibus structure. The units each have 64K bytes of user memory, two RS-232C ports and a Centronics-compatible printer port. The systems also feature 22 programmable function keys, located on a detachable keyboard, that can be utilized under Basic software in four different ways. This translates into 88 programmable functions, a spokesman said.

Both the MCB-2000 and MCB-3000 are architecturally identical, except for their disk capacities. The 2000 incorporates two 328K-byte standard-size floppy disk drives and has the capability of two more drives for a total capacity of about 1.3M bytes of storage. The Model 3000 offers two 1M-byte 8-in. floppy drives that can be supplemented by additional drives for a total capacity of 4M bytes.

Although the two high-end Sanyo computers are currently 8-bit machines, because of their Multibus structure the systems can be eventually upgraded to a 16-bit architecture by adding an as of yet unavailable CPU board, the spokesman noted.

Unlike its strictly business brothers, the FDS-1000 can handle basic small business applications and is also geared for the personal computer market. The 1000 features a Zilog, Inc. Z80 microprocessor and can also utilize Sanyo Basic and CP/M-compatible software. However, the system does not have any date or time functions written into its Basic commands, has only five programmable keys and only one RS-232C port.

Described as "a personal computer for the serious computer user," the Model 1000 has 64K bytes of memory and can support up to three 320K-byte double-sided, double-density floppy disk drives for a formatted capacity of about 1.2M bytes of storage.

Although the smaller system does not have a Multibus structure, it does have a programmable character generator that allows it to perform creative graphics. It also has a built-in music generator, the spokesman explained.

Sanyo software includes word processing and electronic spread-sheets programs.

The MBC-2000 and MBC-3000 cost $3,495 and $6,495 and will be available in May and July, respectively. The FDS-1000 sells for $1,995.

The computers will be sold through Sanyo Business Systems distributors, dealers and representatives, the spokesman said from the firm's U.S. headquarters at 51 Joseph St., Moonachi, N.J. 07074.

Disk Subsystems, Printers Added for Prime 50 Series

NATICK, Mass. — Prime Computer, Inc. has announced two disk subsystems and three serial dot matrix printers for Prime 50 series processors.

The two disk subsystems are the Model 4480 and the Model 4490. The 4480 is a rack-mountable unit that features 160M bytes of storage and a formatted capacity of 151M bytes.

The Model 4490 is a free-standing unit with a storage capacity of 675M bytes and a formatted capacity of 630M bytes, the vendor said.

Both devices are capable of storing 8G bytes of data on-line. The 4480 features an average seek time of 30 msec (the 4490 is 25 msec) and both have an 1.2M byte transfer rate, the vendor said.

The 4480 costs $23,500, and the 4490 costs $46,000. Both will be available this summer, the vendor said.

Also announced were three printers. The Model 3115 is designed for use as a system console or user hard-copy device. It is a keyboard send/receive unit with a bidirectional print rate of 30 char./sec. It comes with a 640-char. buffer and is capable of printing small bursts of characters at 60 char./sec, the vendor said.

All operations on the 3115 are programmable and can be controlled by applications or systems software, the vendor said. The unit costs $2,400

Models 3350 and 3351 are serial dot matrix impact teleprinters with a bidirectional print rate of 160 char./sec. The 3350 is a receive-only version and the 3351 is a send/receive unit, according to the vendor.

Both devices feature a variable transmission rate and a 1K char. buffer, the vendor said.

The Model 3350 costs $4,000, and the 3351 costs $4,200, the vendor said from Prime Park, Natick, Mass. 01760.

Price of HP 9845 Cut

PALO ALTO, Calif. — Hewlett-Packard Co. has announced a 33% price cut on its HP 9845 scientific desktop processor. The firm also announced the processor will now support up to 1.5M bytes of memory.

HP 9845 processors come with 512K bytes of memory and are available with two monochromatic and one color option. The HP 98407A 512K-byte random-access memory (RAM) card reportedly allows users of new and existing HP 9845 users to triple the memory capacity.

The models include the HP 9845B Model 175, the HP 9845B Model 275 and the HP 9845C Model 275, the vendor said.

The HP 9845B Model 175 costs $24,000, Model 275 costs $28,000 and the 9845C Model 275 costs $39,000. The 512K-byte RAM card costs $5,000, the mass storage read-only memory costs $525 and an HP 7908-9845 backup utility costs $250, the vendor said from 300 Hanover St., Palo Alto, Calif. 94304.

Mini Bits

Disk Drive Exerciser Runs Off-Line

SAN DIEGO — Innovative Data Technology, Inc. has announced a disk drive exerciser, the Model FDTE-1050.

The formatted disk drive tester was designed for off-line testing of disk drives. The unit can use a 9-track formatted digital tape recorder or any industry standard formatted drive. The unit will write two data block lengths, read and write file marks and exercises both NRZI (800 bit/in.) and phase-encoded (1,600 bit/in.) modes, the vendor said.

The unit costs $495, the vendor said from 4060 Morena Blvd., San Diego, Calif. 92117.

Eprom/Prom Device Based on Zilog Z80

WOBURN, Mass. — P&E Microcomputer Systems, Inc. has announced an erasable programmable read-only memory (Eprom)/programmable read-only memory (Prom) programmer based on a Zilog, Inc. Z80 microprocessor.

The unit comes with 4K bytes of random-access memory. Two RS-232 data ports provide transfer speeds of up to 19.2K byte/sec. Using a standard terminal, the user can burn data into most Eproms or Proms. Protocols for standard Proms and Eproms are internal, the vendor said.

The programmer can be used in a stand-alone mode or in a computer-driven mode, the vendor said. The unit costs $450. The vendor can be reached through P.O. Box 2044, Woburn, Mass. 01888.

Disk Controller Out For HP HPIB Users

SUNNYVALE, Calif. — United Peripherals, Inc. has announced a disk controller that allows users of Hewlett-Packard Co. HPIB systems to use storage module disk-type drives.

The UP-1967 features data buffering, automatic track seek and position verification. Also featured is automatic alternate track processing, automatic error correction and controller drive diagnostics, the vendor said.

The controller can be used on HP's 3000 Series processors including Models 30, 33, 40, 44 and 64. It can also be used on the HP 1000 series and is compatible with industry standard SMD-type drives.

However, the vendor said some modification is required to insure compatibility. The unit can emulate the HP 7925 disk drive, the 13037C controller and the 12745A HPIB interface without software modification, the vendor said.

The controller costs $10,000 and is available from the firm at 432 Lakeside Drive, Sunnyvale, Calif. 94806.

Power Monitor Has Built-In Printer

SUNNYVALE, Calif. — Billings McEachern, Inc. has announced a power monitor with a built-in printer. The monitor reportedly diagnoses power problems for disk drives and other sensitive equipment and checks for power failure, low line voltage, high line voltage, voltage spike, voltage drop, high-frequency noise and line frequency errors.

The unit includes a lock to prevent tampering with the control settings and a pair of relay contacts for interfacing with external alarm systems.

It sells for $900 from Billings McEachern, Inc., Suite 106, 333 Cobalt Way, Sunnyvale, Calif. 94186.

Power System Gives Minis, Micros Backup

SAN DIEGO, Calif. — Gould, Inc. has announced an uninterruptable power system for small computer backup.

Called the DSU720, the 700VA unit can be supplied with battery power for prolonged operation from five minutes to four hours. Filtering options allow the system to operate with some minicomputer and microcomputer communications hardware, the vendor said.

The unit comes with a static transfer switch option that operates a system bypass. It switches in as little as 1 msec and will automatically reset whenever an overload condition reduces, the vendor said.

The unit costs $2,645 and is available immediately, the vendor said from 2727 Kurtz St., San Diego, Calif. 92110.

5 good reasons to rely on M/A-COM Alanthus Data for your data communications terminals.

More than 60% of the Fortune 500 choose M/A-COM Alanthus Data for their terminals. In fact, we've got over 25,000 data communications devices installed and working in the field. We're one of the largest, oldest, and most respected distributors in the business. Why?

An in-depth selection of reliable, state-of-the-art devices

We offer a complete selection of video display and hard copy terminals from a variety of well-known manufacturers. Including DEC, Falco Data, Lear Siegler, NEC, Okidata, Teletype and Texas Instruments.

Our own service from 65+ nationwide locations

M/A-COM Alanthus Data customer service engineers are available to install, maintain, and service your data communications devices. We'll handle your requirements on either a contract or per-call basis. Typically, 95% of the problems requiring on-the-spot attention are handled within hours of your call.

Flexible financing, competitive pricing

You have a choice of rental (90 day minimum), lease/purchase, or purchase arrangements. And because of our tremendous buying power, we can pass the savings on to you.

Quick response

Most devices can be shipped to you within 48 hours, from one of our well-stocked, strategically-located warehouses.

M/A-COM capabilities and support

With Alanthus and the more than 20 other M/A-COM operating companies, M/A-COM is a leading supplier of digital information processing and transmission equipment for satellite communications, data communications, fiber optics, television broadcast, and CATV.

For more information, call 800-638-6712 or write

M/A-COM ALANTHUS DATA, INC.
6011 Executive Boulevard, Rockville, Maryland 20852

Tell me more about your data terminals:
☐ Send me a free catalog.
☐ My particular interest is _____

☐ Have someone contact me.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

Another Datapro First

NEW

DATAPRO DIRECTORY OF ON-LINE SERVICES

Save time and money locating, evaluating, and selecting on-line services and databases with this new authoritative directory service from Datapro.

Updated monthly

New two-volume directory service

- **Over 100 on-line services** described in detail enable you to quickly determine each vendor's applications emphasis, terminals supported, line speeds offered, documentation, technical support, training, and more.
- **Over 500 databases** coded by applications areas allow you to review available offerings easily and to evaluate database descriptions, scope of coverage, frequency of update, usage and conditions, etc.

Four major indices, all generated from a single database:

- **General Index**—helps you locate suppliers of on-line services, suppliers of databases, names of commercial on-line services, all cross-referenced to other sections.
- **Applications Index**—assists you in finding the on-line services designed for your particular industry, including page references to reports, profiles, vendors.
- **Company Index**—serves as your quick reference to names and addresses of vendors marketing on-line services/databases reported on in the directory.
- **Database Index**—helps you locate each database even if you only know its abbreviation or acronym.

- **Current pricing,** updated regularly.
- **Your subscription** includes two loose-leaf volumes, 12 comprehensive (up to 80 pages each) monthly supplements, 12 monthly newsletters, and Datapro's popular Telephone Inquiry Service.

Special Pre-Publication Offer: $50 off regular subscription

Here's what you'll find in this new directory service:

User's Guide
A concise narrative that quickly familiarizes you with all aspects of the directory service, and helps you get even more for your money.

Inquiry Service
Six blank inquiry service forms help you get all the information you need quickly and efficiently.

General Index
Helps you find what you're looking for regardless of how little information you have available. Lists are arranged by company name, service name, application areas, database names, etc.

Applications Index
Helps you locate everything in the service relevant to each of 27 major application areas and several sub-categories. Included are:

- Accounting
- Banking and finance
- Computer management aids
- Data communications
- Data and database management
- Education
- Energy management
- Engineering and scientific
- Entertainment
- Facilities security and protection
- Government
- Insurance
- Legal
- Management sciences
- Manufacturing
- Mathematics and statistics
- Media (publishing, broadcasting, etc.)
- Medical and health care
- Payroll and personnel
- Programming language processors
- Programming aids
- Sales and distribution
- System programs
- Transportation
- Utility programs
- Word processing and text editing
- Miscellaneous products

Company Index
Alphabetically lists all the companies included in the directory, cross-referenced to service reports, databases, etc.

Database Index
Organized by the full name of each database and also by abbreviations or acronyms, this is the quick route to locating databases.

On-line Services
Hundreds of pages of uniform, objective, easy-to-read descriptions of the important on-line services available in the U.S. and Canada—plus more arriving with each monthly supplement. Each listing includes:

- Vendor name, address, and telephone number and person to contact.
- Vendor history—plus size, organization, financial data—and a categorization of all the company's on-line services.
- Processing services offered—Interactive • Remote batch • Transaction based • Information on availability • Response time • Turn-around time, etc. • Pricing information • Connect time • CPU units • Storage usage, etc. • Contract terms and conditions • Typical monthly charges • Number of users and user contracts
- Network services provided—Host computer characteristics • Data transmission speeds and compatibilities • User terminals supported • Geographical considerations
- Processing centers—Number and location • Configurations • Principal operating systems • Unique support capabilities
- Systems software facilities and utilities—Operating systems • Communications monitors • Database management systems • Report generators • Text processing systems • Programming languages available • Programming development aids and tools
- Descriptions of principal applications software systems and programs offered, with minor application programs listed.
- Industry-specific application systems
- Proprietary on-line databases
- Customer support service—Pricing details and policy • Number of personnel • Education • Training • On-site and remote installation support • Conversion assistance
- Sales and marketing approach—Number of employees and independent organizations involved • How they're used • Marketing strategy • Profile of typical customers
- Other professional services offered—Non-on-line services available: Local batch services • Facilities management • Software package sales • Turnkey systems sales • Hardware maintenance • Programming • Consulting
- Future services and planned enhancements in brief

Vendor Profiles
Your source for more than 800 uniform, detailed descriptions of companies that offer on-line services or that produce proprietary databases—plus additional profiles with most monthly supplements. Each profile includes:

- Company name
- Address
- Telephone
- Principal business
- President
- Director of marketing
- Date founded
- Percentage of employees in computer services
- Sales volume—percentage from services segment
- Primary customers
- Sales concentration
- Product line description

On-line Databases
Hundreds more pages of concise, easy-to-read descriptions of more than 500 databases listed by producer and including vendor information. The standard database profile includes:

- Name, address, telephone, contact name at producer firm
- Producer category
  Commercial for profit
  Federal government
  Not-for-profit
- Description of the database and its content
- Scope of data coverage
- Frequency of update
- Type of database
  Reference—bibliographic or referral
  Source—numeric, textual-numeric, properties, or full-text
- Training and installation services
- Documentation
- How the database is typically used, and preconditions if any
- Typical pricing
- Vendor of the database

Vendor Directory
An easy-to-use alphabetical listing of company names, principal addresses, sales locations, and telephone numbers, plus locations by state and zip code.

User Ratings
What users think of their on-line services will greatly assist you in making your evaluation and eventual decision.

Glossary
Brief definitions of terms used in on-line services and databases.

Vendor Listing Forms
The easy way for subscribers who work for companies involved with on-line services or on-line databases to provide information for listing in the directory, and to update listings as required.

Newsletter
Late-breaking important happenings in the on-line services industry, published monthly.

FOR IMMEDIATE RESPONSE
CALL OUR TOLL-FREE NUMBER

800-257-9406

Or in New Jersey 609-764-0100

Information that leads to action.

datapro

DATAPRO RESEARCH CORPORATION
1805 Underwood Boulevard
Delran, NJ 08075

CW Circle 111

Special Pre-Publication Offer: Save $50. Order Without Risk Today!

☐ Please enter my no-risk subscription to *Datapro Directory of On-line Services* at $340. That's a $50 savings off the regular subscription price of $390. I understand that if, for any reason, I am not satisfied with the materials after I receive them, I may return them within 10 days and pay nothing.

DATAPRO RESEARCH CORPORATION
1805 Underwood Boulevard
Delran, NJ 08075

☐ Even though your offer is risk-free, I am not sure yet. Please contact me to provide more information.

Name _____ Title _____

Phone _____

Organization _____

Address _____

City _____ State _____ Zip _____

CW 2/8 OPS

Portable terminals with DEC VT-52/VT-100* compatibility.

The Ambassador III and IV portable terminals incorporate state-of-the-art technology with rugged design and real economy to allow the user to literally "take his office to any remote area." The ability to easily fit under any airline seat make these terminals the perfect companion for remote bureaus, insurance executives, salesmen, bankers, educators, accountants or stock brokers.

Whether transmitting data or retrieving it the Ambassador III and IV, with its built-in 300 baud accoustic coupler, gives the user immediate access to the information required.

Easy to use, these terminals combine portability with versatility and can be used anywhere in the world using ASCII standard protocol, conversational or time sharing.

Short or long term rentals and leases available with full service. Quantity discounts available.

Telcon Industries, Inc., 1401 N.W. 69th Street, Ft. Lauderdale, FL 33309 (305) 971-2250.

*Other terminal emulations available.

TELCON

The First Name in Portable Worldwide Communications.

A CRT portable terminal for every application, 8 models to choose from.

Ambassador III
CRT Display only.

Ambassador IV
CRT Display with 80 column printer, built in.

Europe (Amsterdam); Magram 31-3240-11044, Montreal; Canfax (514) 737-8696
OEM, Distributor, and Dealer inquiries Invited

In WP Configurations

Study: Daisywheel Printers Used Most

WELLESLEY, Mass. — Currently 85.6% of word processors installed in the U.S. use daisywheel printers, according to a recent study by Venture Development Corp.

The Word Processor Industry: A Strategic Analysis examines the current and future configurations of word processors. These configurations include standalone, shared logic, shared resource and multifunction systems.

The report is based on a survey of word processor users, potential users and manufacturers. Users were asked about the configurations of installed systems and their future purchase plans for printers, terminals, storage devices and other peripherals.

In addition to the daisywheel printers installed, 16.5% of the systems use high-resolution dot matrix printers. Fewer than 10% of the installed systems use ink-jet, ball, laser or other types of printers.

During the next 12 months, printers will be added to many systems, Venture said. Almost 85% of the systems will have daisywheels added, while fewer than a quarter will have high-resolution dot matrix printers added. Because of the high costs, few systems will have laser and ink-jet printers added to them.

Beyond printers, there are many other popular peripherals being used. One such peripheral found on word processors is a sheet feeder. Sheet feeders enable the printers to run unattended and free the secretary for further typing. More than three-quarters of the installed systems have sheet feeders attached.

In addition, Venture noted, more than a quarter of the systems have magnetic-card readers, with an additional 27% using phototypesetting equipment and optical character recognition readers. Only one-fifth of the systems have envelope feeders.

As word processing systems are upgraded and expanded, new supplementary peripherals will be added to increase the realm of applications. During the next 12 months, the figures indicate that there will be an increased demand for both optical character recognition readers and envelope feeders.

More than one-third of the systems will add envelope feeders. Sheet feeders will remain the most widely used peripheral, as 56% of the systems will add them.

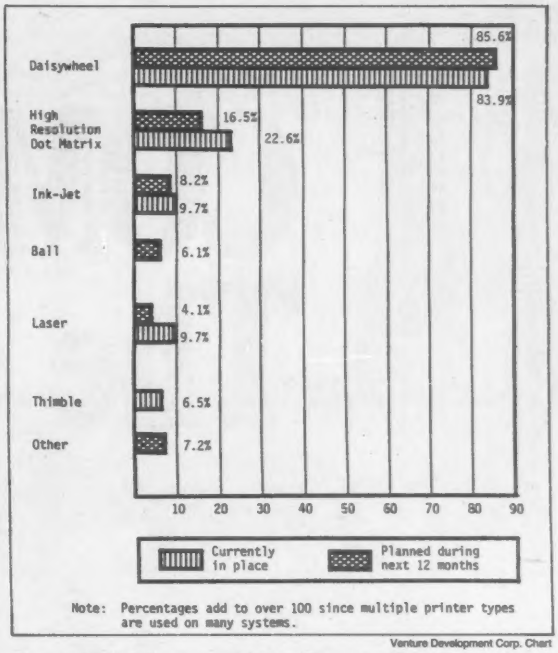
As more printers are added, the number of sheet feeders used will increase. Accordingly, ease of installation and use rank high on the list of criteria used for purchasing sheet feeders.

A substantial number of current word processor users expressed an interest in voice recognition, according to the report.

Rather than entering data through a keyboard, one would talk directly or even from a remote point to the system that would display, store, process and print what was said. According to the report, should this technology become economically feasible, not only would it seriously affect keyboard manufacturers, but it would also vastly reduce the requirement for people to key in text (that is, secretaries and typists).

The report, which looks at shipments over a five-year period, profiles current owners and potential users, tracks the consumption of supplies associated with word processors and analyzes marketing and competitive strategies.

The report costs $2,490 from Venture Development, One Washington St., Wellesley, Mass. 02181.



Venture Development Corp. Chart

Types of Word Processor Printers (Percent of Installed Systems)

Vista System Bundles WP Unit, Data Base

WHITE PLAINS, N.Y. — A stand-alone text and file management system that reportedly combines a word processor with full data base facilities is available from Vista Computer, Inc.

The system configuration includes the Vista word processor with the vendor's Datascan data base management system. The word processing features are integrated with full DP capabilities, giving users without programming skills the ability to merge data base information with letters, reports, documents and other texts, the vendor said.

For example, users can create a sequence of dunning letters and then query an on-line data base for the names of customers with accounts outstanding over 30 days, the vendor said. In this situation the system can reportedly be instructed not to send the same letter twice and to expand or reduce billing information depending on the current status of an account.

The system includes 132-char. output and enables users to create, view, print, delete and edit documents, as well as generate multiple document sequences, the vendor reported.

The word processor costs $5,000 from Vista at 709 Westchester Ave., White Plains, N.Y. 10604.

Lexoriter Gains CP/M, Packages

PHILADELPHIA — Lexor Corp. has unveiled three additions to its Lexoriter product line: a CP/M operating system, a word processing proofreading facility and a software package that handles the creation and maintenance of lists.

The Lexoriter product line is centered around a desktop word processor incorporating two double-density diskette drives, 64K bytes of random-access memory, a 12-in. high-resolution CRT screen and a detachable keyboard with word processing and numeric key pads.

The CP/M operating system is supplied on floppy diskette and supports Basic, Cobol, Fortran, Pascal and PL-80, allowing the development of software in either high-level or assembly languages, the vendor said. It costs $395.

Proofread can check a document created on the Lexoriter word processor against a dictionary. When a prepared dictionary of common words is provided, the user reportedly may modify the dictionary, create additional dictionaries or subtract one dictionary from another. It costs $500.

List Management/Merge handles the creation and maintenance of various types of lists, both for information analysis and mailing purposes. Multiple user-defined logical "and/or" selections are accommodated as are numeric and alphabetical sorts, according to the vendor.

It costs $500, Lexor said from 7100 Hayvenhurst Ave., Van Nuys, Calif. 91406.

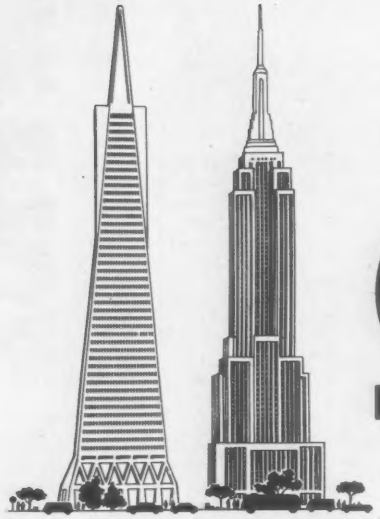
Conversion System Makes OS6, 5110/20 Compatible

SAN DIEGO — Chase Enterprises, Inc. is offering a conversion system that provides compatability between the IBM Office System 6 (OS6) Information Processor and the IBM 5110/20 minicomputer. The conversion is also possible with Honeywell, Inc., Linolex and Hewlett-Packard Co. products.

The 5120/OS6 conversion system allows file job data on an OS6 diskette to be copied onto a 5120 diskette. The data is then available for usage with the DP capabilities of the 5120. Once data is put on the 5120 compatible diskette, the data can be utilized on other IBM-compatible computers, a spokesman said.

The process runs on the IBM computer and does not require any nonstandard hardware features..

The first file change costs $800. Additional changes cost $200 each, Chase Enterprises said from Suite 255, 10717 Camino Ruiz, San Diego, Calif. 92126.



COMS/IV. The shortest distance between two points. Or 2000.

Electronic mail brings all your offices closer together. With COMS/IV, the Corporate Office Management System, you can send a letter from San Francisco to New York, or route a memo to a distribution list with more than 2000 names at the touch of a key. They'll all receive it instantly, whether they're down the hall or across the country.

More than electronic mail.

With COMS/IV you or your secretary can type, revise and print reports and correspondence faster using ForeWord® word processing. Documents are filed electronically, and you can retrieve them quickly with a key word search.

COMS/IV electronic document processing adds professional polish to documents published in-house. Text is reformatted automatically and can be sent to an ink jet or laser printer, or to a photocomposer.

By storing the schedules of people and facilities, COMS/IV Executive Services help plan meetings and manage resources. A Four-Phase computer terminal in your office can display your messages and remind you of appointments, automatically.

All COMS/IV office functions are available at any terminal in the system, making the workstations and people who use them more productive.

IBM software compatibility.

Much of the networking power of COMS/IV is centered in Four-Phase Systems 311/312. Because these systems are IBM 370 instruction set compatible, IBM system programmers can easily support COMS/IV. This saves money in installation, training, and maintenance.

Nationwide support.

Over 1,000 service personnel in more than 150 locations across North America provide individualized hardware and software support and a level of expertise unique in office automation.

Bring your corporation closer together. Call Four-Phase Systems at 1-800-528-6050 extension 1599 (in Arizona call 1-800-352-0458 extension 1599) or complete the coupon.

Four-Phase Systems, M/S 52-10A7, 10700 N. De Anza Blvd., Cupertino, CA 95014

Send me more information on COMS/IV.

Name_____ Title_____

Company_____

Address_____ City_____

State_____ Zip_____ Phone_____

Does your company currently use Four-Phase computers?

Yes_____ No_____ CW 2/8/82

COMS/IV. Only the grapevine is faster.

Four-Phase Systems

10700 North De Anza Blvd., Cupertino, CA 95014.

Corporate Office Management System and COMS/IV are trademarks of Four-Phase Systems, Inc.

Business System Handles WP

ISELIN, N.J. — Prodigy Systems, Inc. is offering a small business computer system that handles business and word processing applications.

The system is based on a Visual Technology, Inc. Model 200 CRT terminal with electronic and mechanical adaptations for the Micropro, Inc. Wordstar WP system.

The Visual keyboard allows the operator to issue a WP command by striking a single color-coded key, the vendor noted.

The system costs $12,000 from Prodigy at 497 Lincoln Highway, Iselin, N.J. 08830

Wordtronix Unveils Two Processors: WP Stand-Alones

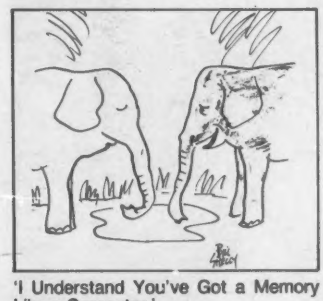
MINNEAPOLIS — Wordtronix, Inc. has unveiled two stand-alone word processors designed to replace memory typewriters.

The Serif 1 and Serif 2 have full-page screens and feature an adjustable 15-in. CRT screen with black characters on a white background and minidiskette storage of up to 100 pages of text on-line, the vendor said. The Serif 1 has one minidiskette drive and the Serif 2 has two drives.

Other features reportedly include a detached clicking keyboard resembling the design and feel of the IBM selectric and a typewriter-quality daisywheel printer called the Typerighter 20.

A Serif 1 with one single-side, double-density minidiskette drive, full-page display, keyboard, Typerighter 20 and Typeright software costs $7,600.

The Serif 2 with double drives costs $8,400. Typeright II, an extended word processing software package, costs an additional $700 on a one-time basis, Wordtronix said from 7182 Shady Oak Road, Eden Prairie, Minn. 55344.



'I Understand You've Got a Memory Like a Computer.'

Processors Get Spelling Check

MINNEAPOLIS — CPT Corp. is offering a spelling checker for its Model 6100 and 8100 word processors.

The spelling checker has the capability to verify the spelling of words as they are being typed and draw the operator's attention immediately to misspelled or unrecognized words.

The electronic dictionary contains the most common words appearing in written correspondence today, as determined by Houghton-Mifflin, publishers of the *American Heritage Dictionary*. The user will also be able to add words that are not included in its standard vocabulary.

The spelling checker costs $500 from CPT at 8100 Mitchell Road, Minneapolis, Minn. 55440.

Olympia USA Offers Printers

SOMERVILLE, N.J. — Olympia USA, Inc. has introduced two letter-quality printers, the ESW 102 and ESW 103.

With a print speed of 17.5 char./sec, the ESW 102 features standard lettering with varying type styles, proportional spacing, four pitches, bidirectional printing and print wheel cassette insertion.

The ESW 103 differs from the ESW 102 in its ability to be used as an electronic typewriter, a spokesman said.

The ESW 102 is priced at $1,590, while the ESW 103 costs $1,990 from Olympia USA, Box 22, Somerville, N.J. 08876.

'Word-990' Eases Letter Design

EAST THETFORD, Vt. — An enhanced interactive word processor that simplifies the production and design of letters and documents is available from Synergistic Systems.

The enhanced Word-990 features word wrap, document output features, automatic file lookup, a document directory with key-words search and faster execution of systems commands, according to a spokesman.

Other standard features include word fill, justify, insert, delete, overtype, center, extract, search, append and other commands.

The Word-990 costs $595 from Synergistic Systems at Cobble Hill Road, East Thetford, Vt. 05043.

DP DIRECTORY Lists
NY Metro/Tri-State
Users & Vendors

- Over 7,000 computer users
- Over 4,000 computer vendors
- Over 11,000 computer executives
- Installed Mainframes listed
- Installed Minicomputers listed
- Fortune 500 companies and major non-industrial companies listed
- Company, division, address, contact's name, title, functional area, phone numbers, major hardware installed, major software used, consultants used, applications.

Price - $250.00 Order - Mail check to:

Computer Management Research, Inc.
373 Fifth Avenue, Suite 1105
New York, NY 10016
(212)683-0606

Get all the colors of the rainbow, and save a pot of gold.

It's no fable. Now you can get Ramtek's 6211 Colorgraphic Terminal for only $4995*

The 6211 is a complete terminal with a high resolution color monitor and display electronics. You can display 16 colors at once from a palette of 64 and choose screen resolutions of 640 x 480 or 512 picture elements. The 6211 also offers a light pen or graphics tablet as options, as well as a rack-mount version.

For hard copy, couple the 6211 with a Ramtek 4100 colorgraphic printer for quick inexpensive plain paper copies. The 6211 can also be used with a color camera for 35 mm slides, 8 x 10 or 4 x 5 prints, or overhead transparencies.

A full range of off-the-shelf graphics software packages are available for the 6211. And Tektronix 4014 emulation allows Tektronix users to work with 16 colors instead of just one. To get into colorgraphics easily and inexpensively, just follow the rainbow.

Call Ramtek at 408-988-2211, extension 6000.

*Quantity Discount

These software companies are actively involved in developing and supporting applications programs for the 6211, and the list is growing.

Presentation/Business Graphics
Abt
Boeing Computer Services
ISSCO
Rapidata
SAS

Finite Element Modeling
Algor
BYU
PDA

General Purpose
Megatek
Precision Visuals
University of Utah

Ramtek
Our Experience Shows.

WORLD HEADQUARTERS—Santa Clara, CA (408) 988-2211. EUROPEAN HEADQUARTERS—Ramtek Europe BV, P. O. Box 67, Badhoevedorp 1170 AB, The Netherlands, 31 (0) 2968-5066. REGIONAL HEADQUARTERS—Washington, D.C. (703) 893-2020; Cleveland, OH (216) 464-4053; Boston, MA (617) 273-4580; Metropolitan New York, NY (201) 238-2090; Orlando, FL (305) 645-0780; Upstate New York/Canada (716) 425-1742; Los Angeles, CA (714) 979-5351; Dallas, TX (214) 422-2200; Chicago, IL (312) 297-2279; Seattle, WA (206) 838-5196; Houston, TX (713) 774-2233; Denver, CO (303) 694-0758.

CP/M® & IBM.

It's hard to imagine one without the other.

If you're thinking about buying an IBM Displaywriter, or if you already have one, you need to know about CP/M-86™ from Digital Research. CP/M-86 is the most versatile operating system in the 16-bit microcomputer world, giving you access to hundreds of applications programs. CP/M-86 along with an application program turns your Displaywriter into a financial advisor, budgeting expert, appointment scheduler, client accountant, or inventory manager, as well as a superb word processor. Call or write Digital Research and ask about CP/M-86 for your Displaywriter. You'll learn why it's the first choice in 16-bit operating systems.

160 Central Avenue, Pacific Grove, California 93950. (408) 649-3896.

DIGITAL RESEARCH™

CCIA Urges U.S. Payment Guidelines

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Computer and Communications Industry Association (CCIA) has added its voice to those clamoring for Uncle Sam to pay his bills faster. Government contractors claim high interest rates are costing them millions of dollars per year while they wait for long overdue government payments.

Legislation now before Congress would direct the Office of Management and Budget to set guidelines for paying government invoices and would award contractors interest penalties on bills not paid on time.

CCIA President A.G.W. "Jack" Biddle told a House of Representatives Government Operations Subcommittee late last month that association members face "an unending series of problems" in collecting federal accounts.

CCIA companies have combined annual revenues exceeding $4 billion with a "significant segment" derived from government contracts, he said.

According to Biddle, one federal agency commonly delays payments for six to seven months. One CCIA member reportedly has "regularly carried $750,000 to $1 million in government receivables for periods of 120 to 180 days."

He said "the causes of the government's bill paying delays range from a lack of staff to overly complex procedures for approving and paying invoices." He noted it is not unusual for invoices to be routed to several locations

(Continued on Page 128)

Magnuson Acquisition Collapses, Chairman Resigns, Layoffs Follow

By Marcia Blumenthal
CW Staff

Unsettling news about Magnuson Computer Systems, Inc.'s current situation followed the collapse late last month of its proposed acquisition by Storage Technology Corp. (STC).

The day after STC announced it ended the acquisition negotiations, Magnuson's chairman, president and chief executive officer, Joseph L. Hitt, resigned. Coincidental with the resignation, Magnuson announced it would incur a $10-million fourth-quarter loss on revenues of less than $5 million.

Later that same week, the firm announced it had terminated 140 employees, with most firings in the executive offices. The company said its marketing and sales staff were subject to the least amount of personnel cuts.

This was the second major layoff in recent months; late last year, Magnuson had laid off 10% of its employees.

Perhaps more disturbing was Magnuson's disclosure that a large part of the loss resulted from write-offs the firm had to take on equipment that malfunctioned and on obsolete and missing inventory.

Although STC refused to elaborate on the termination of the negotiations, the firm's chairman and president, Jesse I. Aweida, said his company concluded that the "advantages we hoped to achieve with the acquisition wouldn't come about."

The advantage that STC saw in acquiring Magnuson was getting into the IBM plug-compatible mainframe market earlier than its targeted 1984 introduction of a high-end mainframe, according to the company's spokesman.

The situation at Magnuson may have some impact on the IBM plug-compatible system business, analysts suggested. People will be wary about ordering from plug-compatible manufacturers, observed William Easterbrook, a vice-president with Kidder Peabody & Co.

'Lost Credibility'

In a public statement prior to the revelation of Magnuson's poor financial position, Hitt said the firm has "lost credibility."

Despite the collapse of the proposed acquisition, Paul Magnuson, the firm's chairman, maintained that his firm is well on the way towards restructuring its management and operation.

The newly named acting Magnuson president, Charles R.

(Continued on Page 124)

Vendors Face Snags Selling Micros to MIS

By Robert Batt
CW West Coast Bureau

After IBM announced its Personal Computer last summer, many microcomputer vendors set their sights on big business as potential users of these versatile machines. In some cases, however, they are running into balky management information systems (MIS) departments.

In the last few weeks alone, Radio Shack announced a 16-bit model geared at the larger corporations [CW, Jan. 25]. But even before IBM entered the market, there were signs that the Fortune 1000 companies were becoming the target of an increasingly competitive sales campaign. Apple Computer, Inc. established a new national sales account, and a handful of new computer stores geared toward big business began to emerge.

All these developments have left the hitherto all-powerful MIS departments extremely worried about how to cope with the proliferation of personal computers throughout their organizations.

An informal poll conducted by *Computerworld* among some

(Continued on Page 135)

Silicon Valley Firms Seen Seeking More Fertile Ground

By Robert Batt
CW West Coast Bureau

OAKLAND, Calif. — Large computer manufacturers are unlikely to build new plants in California's famous Silicon Valley, according to a regional planning report published here recently.

The report, "Silicon Valley and Beyond: High-Technology Growth for the San Francisco Bay Area," was released by the Association of Bay Area Governments (Abag). In it, the agency said that most of the very large computer corporations already headquartered in the valley will spin off any new divisions in other parts of the country.

A shortage of labor, escalating training prices and increasingly congested commuter traffic are blamed by the report for the failure of the region to keep expansion of large computer man-

(Continued on Page 128)

No-Nonsense Traffic Cop

The Beall Channel Switch. Prevents computer traffic jams by directing critical on-line services to another CPU when failure occurs. Allows specific peripherals to serve more than one computer. Redrives all CPU signals to give you far more flexibility for physical placement of peripherals.

And Beall does all of this less expensively, more reliably and with less opportunity for operator confusion than anyone else.

We make five basic models to provide up to eight switchable interfaces each of which can be logically connected to as many as eight CPUs.

Want to summon more facts? They're in our new brochure. Write or call for it today.

John Beall & Company, Inc.
9103 Third Avenue • North Bergen, N.J. 07047 U.S.A. • 201.854-3562

Magnuson, STC Deal Fails

(Continued from Page 123)

Cole, also disclosed the firm was talking to certain shareholders about the possibility of placing some of their private capital in the firm. Any such arrangement is subject to the approval of a short-term operating plan.

Concerns on Retrenching

However, some analysts have expressed concern about the company's ability to retrench in light of its thin management.

During a recent interview Magnuson disclosed the firm had some engineering problems with its M80/42 system that required extensive reworking in the field.

"We went from shipping one or two systems a month to shipping 50 systems a month. As a result we didn't get the normal break-in curve as far as bringing reliability into the product right off the bat," Magnuson said.

Some users had contracts for equipment that specified a date certain performance standards had to be met, he continued. Because the company could not meet some of these contractual specifications by the required date, it had to make concessions on the price of the equipment installed at users' sites, Magnuson said.

Corrected the Problems

However, the mainframer has fully corrected the problems with these systems, Magnuson said, claiming "they are now working like a dream."

Although Magnuson said the firm is still interested in a merger partner, it currently is not negotiating with any firms.

He also said that despite last year's losses, which are expected to total more than $13 million on revenues of about $31 million, the firm will be able to meet its financial obligations and has a sufficient line of credit to cover future borrowing needs.

Besides engineering problems, the firm's top management also made decisions that "in hindsight appear to have been wrong," he remarked.

In particular Magnuson cited the firm's starting work on Cmos development, anticipating it would raise $25 million for a research and development partnership. That partnership never materialized. Subsequently the firm had to charge off the expenses related to that venture on its 1981 financial statement.

Did Agencies' R&D Stance Play Role?

Storage Technology Corp.'s (STC) formal statement of why its merger with Magnuson Computer Systems, Inc. fizzled focused on STC's strategic position on entry into the computer systems market. However, recent rumblings from the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB) may also have had something to do with the termination of the arrangement.

In recent weeks, these organizations have been casting a shadow on how funds advanced to a firm through research and development limited partnerships should be treated on financial statements.

According to a recent article in *Barron's*, the SEC and the FASB are investigating the funding arrangement between Matrix Corp., a maker of medical diagnostic imaging systems, and its R&D partnership. One of the issues appears to be how Matrix is accounting for funds advanced to it from the R&D partnership.

Such funds, the SEC has argued, should be accounted for as loans, with interest on those loans considered an expense on the firm's income statement, *Barron's* said.

STC is involved with two R&D partnerships that raised $90 million. If some of these funds have to be accounted for on a current basis, STC's bottom line could be impacted.

Everybody promises information systems that will work together in the future...

DOS/VS(E) and CICS/VS

- SYSTEMS PROGRAMMING CONSULTING Consultants in Minneapolis and Wash., D.C.
- PROGRAM PRODUCTS

BIMSPOOL DOS/VS(E) Terminal Printer Spooling
Retrieves batch print from POWER/VS queue, converts and prints on 3270-type terminal printer via CICS or SHADOW. May be used to eliminate RJE printers. $4000 or $200/mo.

BIMSPOON On-line to Batch Print Spool
Used by DOS/VS(E) CICS/VS on-line application programs to create batch print reports under POWER/VS(E). Multiple tasks may create reports concurrently. If used with BIMSPOOL, reports may be spooled to 3270 terminal printers. $840 or $42/mo.

BIMSERV DOS/VS(E) Library Display
Displays directories and entries in all DOS/VS(E) libraries, plus Label Area and VTOC's (CICS). $1480 or $74/mo.

BIMDSLOG DOS/VS(E) Console Hard Copy File Display
Used by operators or programmers to review DOS/VS messages via CICS or SHADOW without tying up system console. $720 or $36/mo.

BIMMONTR DOS/VS(E) System Status and Queue Display
The original and still best DOS/VS(E) system activity, POWER/VS queue, and POWER/VS job output display system (CICS). Numerous options to assist operators and programmers. $920 or $46/mo.

BIMDEVC DOS/VS(E) Device Assignment Status
Displays logical unit assignments to devices (CICS). $360 or $18/mo.

BIMSUBMT DOS/VS(E) Job Submission Editing
On-line job stream editing, storage, and submission under CICS/VS. $1000 or $50/mo.

BIM B I MOYLE ASSOCIATES
4355 LYNDALE AVENUE SOUTH
MINNEAPOLIS, MN 55409
(612) 822-2661 Telex 290 123

Member Independent Computer Consultants Association

Mainframe Vendors Post Mixed Results

Four mainframe vendors — Control Data Corp., Burroughs Corp., Amdahl Corp. and NCR Corp. — posted mixed results for fiscal 1981 as the impact of foreign currency translations and a European recession continued to impact most vendors' financial performance.

Economic conditions aside, CDC had a bright year as revenues from its computer business advanced 12% from last year's results while earnings grew 30%.

For its final quarter, CDC reported consolidated revenues of $1.1 billion, up from revenues of just more than $1 billion a year ago, with revenues from its computer business totaling $859 million.

Earnings for the period rose to $42.9 million or $1.12 per share, up from earnings of $36.2 million or 95 cents per share in the final quarter of 1980. Earnings from computers totaled $31.4 million for the fourth quarter compared with $23.6 million last year.

For fiscal 1981, CDC reported consolidated revenues of $4.2 billion, up from $3.8 billion a year ago. Computer revenues of $3.1 billion accounted for 75% of total sales, up from $2.8 million in 1980, which accounted for 73% of the firm's sales.

Earnings for the year reached $170.6 million or $4.48 per share, up from $150.6 million or $4.23 per share a year ago. Earnings from the computer portion of the business contributed $120.4 million, up 30% from the $92.5 million earned last year.

Although revenues from the firm's commercial credit showed a slight gain, earnings from this part of the business dropped about 13%.

Burroughs' Earnings Improve

From Detroit, Burroughs also showed improved earnings for fiscal 1980. Earnings reached $148.9 million or $3.58 per share, up from earnings of $82 million or $1.99 per share last year.

The annual earnings reflected the operations of Systems Development Corp., acquired last January.

For the final quarter of 1981, Burroughs earned $62.9 million or $1.51 per share compared with a loss of $68.7 million or $1.66 per share in the last quarter of 1980.

Revenues for the year grew 17%, reaching $3.4 billion up from revenues of $2.9 billion for 1980.

Fourth-quarter revenues hit the billion-dollar mark, representing a 28% increase from revenues of $794 million in the final quarter of 1980.

Burroughs Chairman W. Michael Blumenthal noted that growth in fourth-quarter orders was strong. However, he said that net earnings for the year were reduced by about $1 per share as a result of unfavorable currency translations.

Blumenthal also said the firm's asset management program resulted in a 40% improvement on days sales outstanding for accounts receivable and a reduction of 32% in work-in-progress inventories.

Amdahl Quarter Net Dips

At Amdahl, recent price cuts on some of its 470 and 580 systems resulted in a 6% reduction in fourth-quarter earnings from 1980's final quarter, the firm maintained. Earnings for the period were $6.3 million or 31 cents per share, down from $6.7 million or 33 cents per share in the year-ago quarter.

However, earnings for the year increased 76%, reaching $26.8 million or $1.31 per share, up from $15.2 million or 80 cents per share in 1980.

Revenues for the year totaled $442.8 million, up from 394.4 million in 1980. Fourth-quarter revenue climbed 14% to $123.7 million from $108 million.

Amdahl said its purchase/lease ratio has undergone a healthy change, currently standing at 75% purchase to 25% lease, compared with 60% purchase and 40% lease in 1980.

NCR Earnings Drop

NCR reported its financial performance was impacted by a poor European economy. Earnings for the year declined 18% from last year, dipping to $208.2 million or $7.72 per share from 1980's earnings of $254.7 million or $9.51 per share.

Fourth-quarter earnings dropped 24% to $90.1 million or $3.35 per share, compared with earnings of $118 million or $4.38 for the comparable period of 1980.

Revenues for the year grew 3%, reaching $3.4 billion, up from $3.3 billion last year. Fourth-quarter revenues dipped slightly from $1.08 billion in 1980 to $1.04 billion this year.

Datapoint offers systems that work together now

Everybody talks about the office of the future as something you should plan now. Datapoint lets you *order* it now with the Integrated Electronic Office™.

You can increase the productivity of your office staff and decrease the enormous waste of time and effort that outmoded procedures involve by looking into just what Datapoint can do for you *now.*

Data processing at your fingertips

Need to inventory raw materials? Track your sales volume? Do a budget review? Find out your share of market? Check the payroll or cash flow? Delinquent accounts? Sales commissions?

Whatever information you need, Datapoint's data processing equipment, coupled with your software programs, helps you organize data easily and select just what you need quickly. Because with Datapoint's integrated systems, the workstation at your desk can give you access to every file in your company.

Word processing with data processing

Datapoint's word processing and data processing are integrated. That means from your workstation you can access both text and data from anywhere in the system regardless of location. That makes it easy and efficient to exchange information.

And Datapoint's word processors are oriented for you, the user. They're simple to learn. A beginner can quickly be producing documents, editing, filing and retrieving, preparing reports and more.

Mail faster than ever before

With Datapoint's Electronic Message Service (EMS™), messages speed from office to office within your company, from another Datapoint system, or from a company with a Telex or TWX. Messages can be sent and received quickly and inexpensively from any workstation. And priorities can be placed on messages so you know which ones need to be handled first.

Datapoint's Electronic Message Service can send memos, reports, data files, programs, and other documents to people anywhere in your company. You don't have to worry about loss or delay, because messages are always contained within the system and their status is always known.

A telephone switch that handles data too

Datapoint's Information Switching Exchange (ISX™) is a digital PBX that gives you both a voice and data switch to integrate all your information processing. The ISX lets you access and move any digital information, voice, data, text or message, on the most inexpensive lines. And with the ISX's reporting capabilities, you can stay on top of the cost and performance of your entire system.

The ISX can grow from 100 to as many as 20,000 phones or workstations easily and inexpensively. The modular design of the ISX lets you expand the number of users and incorporate all types of information as your company and its information processing needs grow.

And they work together now

Datapoint doesn't just *promise* you increased efficiency and productivity or better management and control. With Datapoint you get these advantages with systems that work together *now.* And Datapoint's single worldwide sales and service organization will help you plan, install, and maintain these systems wherever you need them.

To see the systems that Datapoint can offer your company *today,* write for our free brochure: A Capsule Look at Datapoint. Datapoint Corporation, Corporate Communications T-41CW , 9725 Datapoint Drive, San Antonio, Texas 78284. Or call us at (512) 699-7059 for the Datapoint sales office nearest you.

DATAPOINT

SYSTEMS THAT WORK TOGETHER NOW

8086/8087/8088
CROSS SOFTWARE PACKAGES

1 C cross compiler for the 8086. All facilities of the complete C language, including floating point for the 8087, are supported. Optionally, memory can be allocated for use with the 8088. Output is symbolic assembly language. The compiler is suitable for use in porting UNIX to the 8086.

2 Cross assembler/linker/librarian/downline loader for the 8086. Assembler input is an extension to that used by Intel. Loader output is a file in standard Intel hex format.

3 Simulator/debugger for the 8086. Capabilities include display, breakpoints, interpretive execution, as well as many others.

Host System: PDP-11 running RT-11, RSX-11M, UNIX/V6, UNIX/V7; or VAX-11 running VMS, UNIX/32V.

For additional information:

Advanced Digital Products, Inc.

1701 21st Ave. S., Suite 222 • Nashville, TN 37212
Phone (615) 383-7520 • Telex 4990476

Intel is a trademark of Intel Corporation; UNIX and UNIX/32V are trademarks of Bell Laboratories, RT-11, RSX-11M, PDP-11, VMS, and VAX-11 are trademarks of Digital Equipment Corporation.

Everybody is going to this one!
(Because there's never been anything else like it!)

COMPUTERWEEK

COMPUTERWORLD · COMPUTER BUSINESS NEWS · INFOWORLD

A 3-IN-1 LEARNING SYSTEM TO HELP YOU KEEP PACE WITH THE COMPUTER REVOLUTION. PRESENTED BY CW COMMUNICATIONS, THE WORLD'S LEADING PUBLISHER OF COMPUTER-RELATED NEWSPAPERS AND MAGAZINES.

MARCH 2-5, 1982

HYATT REGENCY EMBARCADERO, SAN FRANCISCO

The *first* computer conference sophisticated enough to serve the needs of three major markets and still give *you* what you need most ...

COMPUTERWEEK! Created by CW Communications/Inc., this *totally new concept* in conferences offers you an unprecedented opportunity to participate in a multi-phase learning experience.

Using our unique multi-dimensional system, you can sample the latest ideas in *your* field, or switch to new areas for professional mind-broadening — without missing a beat!

You can choose from over 80 conference sessions designed to cover *every* facet of the revolutionary computer industry! And learn from over 200 industry leaders!

Programmed for greater personal growth potential.

When you attend COMPUTERWEEK, you can build an individualized program that provides you with every possible potential for growth.

Each day starts with an "Early Bird Rap Session" to get you *charged* for an exciting day of new ideas. Then, throughout the day, while you're pursuing your own special interests, you'll be surrounded — and *stimulated* — by people from other areas of the industry who are participating in programs designed just for *them*. (And there's no distracting trade show/exhibit hoopla.)

COMPUTERWEEK has it all ...

- ☐ Top sessions for three markets
- ☐ Recognized industry leaders
- ☐ "Hot button" topics
- ☐ Industry trends
- ☐ Time for interacting and communicating
- ☐ Give-and-take with experts

... and for your convenience

- ☐ Paging system for calls on-the-spot
- ☐ Session tapes for sale on-site

Register Now!

We believe COMPUTERWEEK is going to set the standard for computer conferences for years to come. Be among the first to experience — and benefit from — this revolutionary conference. Reserve your place now!

	Prices
* **Full COMPUTERWEEK Program** — Tues.-Fri. (March 2-5). Includes all sessions, Days 1-4; Lunch Tues. & Fri. only.	$595
* **OEM Business Forum** — Wed. & Thurs. (March 3&4). Includes all sessions, Days 2&3; Lunch Wed. only.	$345
* **Desk-Top/Personal Computer Day** — Fri. (March 5), Includes all sessions and lunch, Day 4 only.	$95

COMPUTERWEEK Schedule of Events March 2 - 5, 1982

Productivity & Information Systems Planning

"Strategic Management of EDP Resources" *John M. Thompson, Vice President, Index Systems*

"EDP Economics and Software/Organizational Productivity" *Werner Frank, Executive VP, Informatics, Inc.*

"Case History in MIS Productivity Improvement" *Daniel Merrell, Manager, Productivity and Technical Training, Union Carbide Corporation*

"Applying 'Theory Z': A Case History in Implementing Japanese Management Techniques in the U.S. Computer Industry" *John Rehfeld, VP and General Manager, Toshiba America, Inc., Information Processing Systems Division*

"Data Processing Management's Role in Office Automation" *Walter E. Ulrich, President, Walter E. Ulrich Associates*

Hardware & Capacity Planning

"Performance Modeling" *Barry Stevens, VP, Performance Management Associates*

"Software Engineering in the Productivity Environment" *Ken Kolence, President, Institute for Software Engineering*

"Reducing System Definition-Development Lifecycle Costs" *Gopal K. Kapur, President, Kapur & Associates, Inc.*

Human Resources

"The Personnel Crunch in Data Processing" *Harold S. Bott, Partner, Arthur Anderson & Company*

"The Programmer Gravy Train Derails" *Charlene Francl, Consultant, Quality Assurance, Security Pacific National Bank, with Thomas J. Francl, Director, Information Services, The Bekins Co.*

Telecommunications & Distributed Processing

"New Application Opportunities in Telecommunications" *Professor Leonard Kleinrock, School of Engineering & Applied Science, University of California at Los Angeles*

"Social and Economic Impact of Telematics" *Dean Gillette, Executive Director, Corporate Studies, Bell Laboratories*

"Using Non-IBM Systems in SNA Environments" *Saroj K. Kar, President, Telcom Computer Technology International*

"Future of the SNA Applications Environment" *John King, President, 3K Group*

Software Development & User Applications

"Improving Programming and Programmer Productivity" *Jack F. Ewers, Manager, Systems & Programming, Honeywell, Inc.*

"Engineering Fourth Generation Software Products and User Applications" *Martin Goetz, Senior Vice President, Applied Data Research, Inc., Director, Software Products Division*

"Productivity Leverage Through System Utilities" *Asa Lanum, Vice President/Advanced Development, Pansophic Systems*

"Higher Level Languages: Status, Prospects & Payoffs" *Jim Wilcox, VP, Heneco, Inc.*

Software Strategy

"IBM Software Strategy for the 1980's" *Robert Cook, VP, VM Software*

"Large Processor Architecture Trends" *Bryant Jeffries, Strategic, Inc.*

"Guaranteed Systems: Applications Development Through Hardware Concepts" *Dan Nolan, Deputy Director, Business Data Processing, Computer Sciences Corporation, Systems Division.*

"Survivable Systems" *Dr. W.H. Highleyman, President, Sombers Associates, Inc.*

Database

"Strategies & Implementation of the Corporate Data Base" *Leo Cohen, President, Performance Development Corporation*

"Data Structured Design for Distributed Data Processing" *Hugh W. Ryan, Arthur Anderson & Company*

"Mainstream Choices In Database" *Charles Bachmann, Vice President, Cullinane Data Base Systems*

Market Opportunities

"Future of the PCM Mainframe Vendors" *Duane Kirkpatrick, Partner, Robertson, Coleman, Stephens & Woodman*

"Telecommunications: The Bridge Between Word and Data Processing" *Walt G. Frederickson, Vice President, Technology, Harris Corp.*

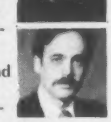
"Local Networks: Planning For Maximum Application Potential" *Frank Dzubeck, President, Communications Network Architects, Inc.*

"Have You Missed The Venture Capital Boom?" *Roy Rogers, Partner, Hambrecht & Quist*

"Measuring And Improving Programmer Productivity" *Girish Parikh, President, Shetal Enterprises*

"Why Management Hates DP (And What To Do About It)" *Walter Lankau, Vice President, Management Decision Systems*

"How to Cut Support Costs with Professional Documentation" *Stephanie Rosenbaum, President, Tech-Ed*



"Concepts and Trends in Information and Data Resource Management" *Steven H. Spewak, Vice President, Performance Development Corp.*

March 3 & 4, 1982

THE OEM BUSINESS FORUM

"The Economic Outlook for the OEM...Boom or Gloom" *Chairperson: Adolf "Sonny" Monosson, Chairman, American Computer Group, Inc.*

"Japanese Vendors Meet the Press" *Chairperson: Peter Bochner, Los Angeles Bureau Chief, Computer Business News*

"The Vertical Marketing Survival Guide" *Chairperson: Lawrence D. Dietz, MBA, JD, President, The Alec Group*

"Complex Legal Issues Affecting The OEM" *Chairperson: Richard Raysman, Attorney, Brown & Raysman, and Contributing Columnist, Computer Business News and Peter Vogel, Attorney, Peter S. Vogel, P.C.*

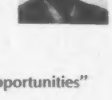
"The OEM Market Analyst ... A Look to the Future" *Chairperson: Tom Casalegno, Vice President, Publisher, Computer Business News*

" 'Retail' Takes on a New Meaning for the OEM" *Chairperson: Deborah de Peyster, East Coast Bureau Chief, Computer Business News*

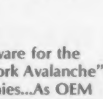
"The European Market ... How to Break in Successfully" *Christopher G. Codrington, Managing Director, Interco Business Consultants Ltd.*

"OEM Technology...An Intense Overview" *Chairperson: Vic Farmer, Editor, Computer Business News*

"Survival Tools in the 80's" *Chairperson: Richard C. Cole, President, Computer Results, Inc. and Michael R. Wood, Partner, Andreoli, Johanson & Wood*



"Marketing Strategy: Tools To Ensure Continued High Profit" *Jack M. Keen, Director, Management Products, INPUT*



"The Independent Software Business Vendor" *Chairperson: Rory O'Connor, Senior Editor, Software, Computer Business News*

"Taxes ... The Software State Tax Issues" *Rory O'Connor, Senior Editor, Software, Computer Business News*

"Fortune 500 Manufacturers...As OEM Opportunities" *Neil Kleinman, International Data Corp.*

Other Topics of Interest

"Software...The State of the Art" • "Software for the Vertical Marketplace" • "The Local Network Avalanche" • "Financial, Banks and Insurance Companies...As OEM Opportunities" • "The Process Control Industry...As An OEM Opportunity"

March 5, 1982 — Desk-Top/ Personal Computer Day

Morning Sessions

"Personal Computing: The Information Tool of Tomorrow, Today!"

The big guns of computing address the problems of the large corporate user, the small business user and the vendor.

"How to Choose A Vendor for Corporate Micros"

"Choosing the Right Computer for You: Analyzing Your Needs and Cost/Performance"

"Market for Personal Computers"

"After 'Visicalc,' What?" *Daniel S. Bricklin, Chairman of the Board, Software Arts*

"The Personal Computer: Tomorrow's Business Tool, Today!" *H.E. James Finke, President, Commodore International Ltd.*

"Can Personal Computers Break Users' Application Logjam?" *Kenneth A. Parker, President, Executec Corp.*

Afternoon Sessions

Each hour, from 2:00 p.m. to 5:00 p.m., there will be five concurrent sessions. You can choose from the following topics:

"DDP with Micros" • "The Executive Work Station" • "CP/M as Vendors View It" • "Legal Office Applications" • "The Classroom of the Future"

"Microcomputer Components" • "CP/M — The Basic Micro Operating System" • "User Friendly Documentation" • "Accounting Applications" • "Computers and Fun"

"Maintenance & Service Contracts" • "Microcomputers: Lease or Purchase?" • "Programming Languages: What's Ahead?" • "Graphics" • "The Future of Personal Computing: New Technologies"

How the COMPUTERWEEK 3-in-1 Learning System Works for Computerworld Readers Like You ...

If you're like most of today's systems executives, you're constantly looking for new ways to use EDP hardware, software, personnel and telecommunications resources more efficiently.

COMPUTERWEEK meets *your* information needs by providing a series of horizon-expanding sessions — many headed by the topflight authors of our popular "In Depth" and "Extra!" *Computerworld* features.

Morning sessions cover the latest in ...

- systems and software technology • communications
- EDP management issues
- DP's role in office automation

Afternoon sessions dig deeper into ...

- specific implementation skills • technical details
- how-to topics

Some of the industry's leading authors and teachers offer courses emphasizing professional skills for near-term payoff in improved procedures, cost-cutting, or on-time performance.

Sessions feature a *stimulating* mix of formats: tutorial presentations, panels and discussion-oriented "focus groups" where the emphasis is on *your* participation.

(Check the schedule for more on what COMPUTERWEEK has specifically targeted for you!)

Pick the sessions that are best for you!

Just fill in, detach and mail your Registration Form today to COMPUTERWEEK, 375 Cochituate Rd., Box 880, Framingham, MA 01701. *Or call Toll-Free 1-800-225-4698* (in Massachusetts, call collect 617-879-0700) and ask for Louise Myerow, Registration Manager.

You need send no money now. When you pay, you can use check, American Express, VISA or MasterCard. (Cancellations after February 15 subject to $50 service charge.)

AA The Official COMPUTERWEEK Airline — Arrangements by GARBER TRAVEL

Save from 25% to 52% on your air fare ...

American Airlines and Garber Travel have also planned both pre- and post-conference vacations at tremendous savings. Call now at 1-800-225-4570 (in Mass., call 617-787-0600)!

COMPUTERWEEK Registration Form

Mail to: **COMPUTERWEEK**, 375 Cochituate Road, Box 880, Framingham, MA 01701 C

Or call toll-free: 1-800-225-4698 (in Mass., call collect 617-879-0700).

☐ Sign me up for the full COMPUTERWEEK Program, Mar. 2-5, 1982, for $595.

☐ Payment enclosed ☐ Bill me

☐ Bill my company (P.O. # _____)

☐ Charge to:

☐ American Express ☐VISA ☐MasterCard Acct. # _____

Expires _____ MC Interbank # _____ Signature _____

☐ Sign me up for the OEM BUSINESS FORUM, Mar. 3 & 4, 1982, for $345. (This program is included in full-program registration.)

☐ Sign me up for DESK-TOP/PERSONAL COMPUTER DAY only, Mar. 5, 1982. (Included in full COMPUTERWEEK Program registration. May be combined with OEM BUSINESS FORUM registration.) My one-day fee is $95.

Name (Please print or type) _____

Title _____ Company _____

Address _____ City _____

State _____ Zip _____ Telephone _____

Cut along dotted line and mail.

High-Tech Firms Seen Leaving Silicon Valley

(Continued from Page 123)

ufacturing facilities within the Bay Area.

"Competition for a limited pool of skilled workers has led to extremely high employee turnover, which has adversely affected productivity," the report, authored by Abag's Chief Economist Patrick Mason, pointed out. At the same time, what remains of available industrial land is becoming scarce and expensive and development regulations often delay planned expansions for months.

"Faced with some of the highest training costs in the U.S. and a strained transportation and public infrastructure capacity, growing firms are now forced to make difficult decisions when they expand," the report noted. "Most firms would like to remain very close to their current facilities; but as labor attraction becomes difficult due to the shortage of affordable housing and labor turnover remains high due to the stiff competition for scarce skilled workers, many high-tech firms have decided to expand new facilities outside of Silicon Valley."

According to Mason, the Bay Area has become a victim of its own success. Over the past six years, Santa Clara County (the heart of Silicon Valley) has gained 83,000 high-technology jobs, making it the ninth largest manufacturing sector in the U.S.

Over the next five years, the report said, another 40,000 to 50,000 jobs in high-technology are expected to be created, mainly in small and medium-size companies.

Even this development, however, appears to be due more to force of circumstances than a willing choice by those companies to remain in Silicon Valley. "Small, but rapidly growing firms face many of the same problems as the larger companies, but lack the management staff to launch major search campaigns and tend to limit their range of expansion to areas very close to home," Abag said.

Aggressive Move Urged

As a solution, the report urged neighboring Bay Area communities to be more aggressive in attempting to capture computer related companies. Firms providing new products such as microcomputers, decentralized data and processing systems for offices and small businesses, peripherals, software and communications equipment such as office private branch exchanges are identified as the best candidates for expansion into these neighboring communities.

In this endeavor, the report cited the ability to attract and retain labor as the primary factor that a high-technology company will consider when selecting new plant sites.

"High-tech firms are most interested in a location that will fulfill two basic requirements. First, the area will be perceived as an attractive living and working environment to the industry's highly paid executives, engineers, scientists and managers. Second, the location has an existing and available semiskilled labor pool from which the new company can draw," the report stated.

Abag said the proximity of university research institutions, recreational and cultural opportunities are also important factors and has led to areas such as Colorado Springs, Colo., and Boise, Idaho, becoming popular areas for expansion by Bay Area companies.

The report also warned that the clustering of companies — called agglomeration — in an area such as Silicon Valley is no longer an advantage. As a result of job competition within the agglomeration, some companies now look specifically for sites without competing high-technology activities.

COMPUTERWEEK

COMPUTERWORLD · COMPUTER BUSINESS NEWS · INFOWORLD

A 3-IN-1 LEARNING SYSTEM TO HELP YOU KEEP PACE WITH THE COMPUTER REVOLUTION. PRESENTED BY CW COMMUNICATIONS, THE WORLD'S LEADING PUBLISHER OF COMPUTER-RELATED NEWSPAPERS AND MAGAZINES.

Save from 25% to 52% over regular economy fare from your home city round trip to San Francisco for Computerweek.

March 2-5, 1982
HYATT REGENCY EMBARCADERO
SAN FRANCISCO

Round-trip Airfares From Sample Cities

From	Regular Economy Fare to San Francisco Only	Computerweek Special Fare to San Francisco Only	Coastline Trip from Los Angeles to San Francisco	San Francisco including Las Vegas Trip	San Francisco including Squaw Valley Trip
Boston	$948.00	$650.00	$450.00	$466.00	$483.00
Chicago	$736.00	$318.00	$378.00	$443.00	$417.00
Dallas	$566.00	$424.50	$361.50	$410.50	$424.50
Denver	$472.00	$358.00	$286.00	$330.50	$351.00
Miami	$724.00	$340.00	$459.50	$487.00	$373.00
New York	$956.00	$600.00	$450.00	$479.00	$453.00
Philadelphia	$844.00	$600.00	$450.00	$444.00	$449.00
Washington D.C.	$914.00	$650.00	$450.00	$459.00	$449.00

Garber Travel has made special arrangements to save you money on special Computerweek vacation packages. In some cases an additional vacation combined with American Airlines' special Computerweek airfares still costs you less than the regular economy airfare to San Francisco alone! You can combine your attendance at Computerweek with your choice of a pre- or post- conference vacation at a very small additional cost.

CALIFORNIA COASTLINE — Depart Friday, February 26. Overnight Los Angeles; travel via deluxe motorcoach, visit Santa Barbara, San Simeon, Hearst Castle, and famed 17 mile drive at Monterey. Program includes three nights accommodations, meals sightseeing and gratuities. ..... **COST: $329.00**

LAS VEGAS — Post meeting weekend visit to Las Vegas including transfers, 2 nights at Stardust Hotel, and gratuities. ..... **COST: $ 69.00**

SKI SQUAW VALLEY (Lake Tahoe) — Post meeting, three night visit to renowned Olympic Valley, including hotel, lift tickets, round trip transfers, and taxes. ..... **COST: $109.00**

Single rates available on request.

For reservations for air travel and/or pre/post vacation arrangements, contact Conference and Convention at Garber Travel
Call toll-free: 1-800-225-4570
In Massachusetts call: 1-617-787-0600

CCIA Urges Pay Guidelines

(Continued from Page 123)

for approvals before payment is made.

Unless the proposed legislation is passed, he said, "there is no incentive for government to streamline its billing procedures. Federal officials cannot perceive the additional costs caused by slow payment, which are included in the price of goods and services acquired by the government." Biddle added that contractors have little legal recourse to force the government to pay more quickly.

In addition, he suggested the bill could be strengthened by adding provisions to correct problems of agencies dragging out acceptance testing, protracting lease renewal procedures, requiring excessive invoice paperwork and taking unwarranted prompt payment discounts.

"What a Day! I Must Have Processed 200 Words."

Sales Echo Boast, Grow 200%

Firm Aims at Future With Strategic Software

By Robert Batt
CW West Coast Bureau

SAN FRANCISCO — "Much of the application software in use today is similar to the dinosaur — thick in girth, thin in adaptability and out-of-date."

That is a quote from a brochure recently issued by Walker Interactive Products, and that is the philosophy that has led Walker to develop a family of applications products that it claims represents a breakthrough in the technology.

The company, based here, seems to have attracted widespread interest from the user community. Since it switched from consulting to the software field in 1980, its sales have grown by 200% a year.

Richard Currier, president of Walker Interactive, claimed that his firm is unique in its ability to make a large IBM system work like a personal computer. This, according to the company, results from the interactive nature of its products, which allow information to be updated quickly. Walker is selling this as an alternative for users frustrated by the inflexibility of large-systems software.

"We are on the leading edge of this technology. This is where the market will be in 10 years' time," Currier said.

Walker Interactive makes three products — an accounts payable package, a purchasing management system and a materials management system — as part of its Integrated Interactive Financial Systems (IIFS) family. Recently the company announced a package for the 4300 series compatible with IBM's new SSX operating system.

"The state of the art in applications software is really quite dismal," maintained Currier. Up until now, he said, there has been no IBM with which to compete in the applications field, so the technology is not as highly developed as in the systems software field. Walker claims to have the field much to itself and, said Currier, "Hopefully we will become the IBM of the applications sector."

The company is regarded in some industry circles as one of the top 10 software companies likely to emerge in

(Continued on Page 132)

Supershorts

IBM Canada Ltd. will increase prices on most of its equipment, services and program products. Purchase prices and maintenance costs will go up immediately; rental and lease fees will increase May 1. The hikes will range from 4% to 20%.

— — —

Discovision Associates, a joint venture of MCA, Inc. and IBM, will close its only U.S. manufacturing plant in Carson, Calif., at the end of February.

— — —

American Satellite Co. has signed an agreement with the Puerto Rico Telephone Co. for the joint provision of satellite communications services between the continental U.S. and Puerto Rico.

— — —

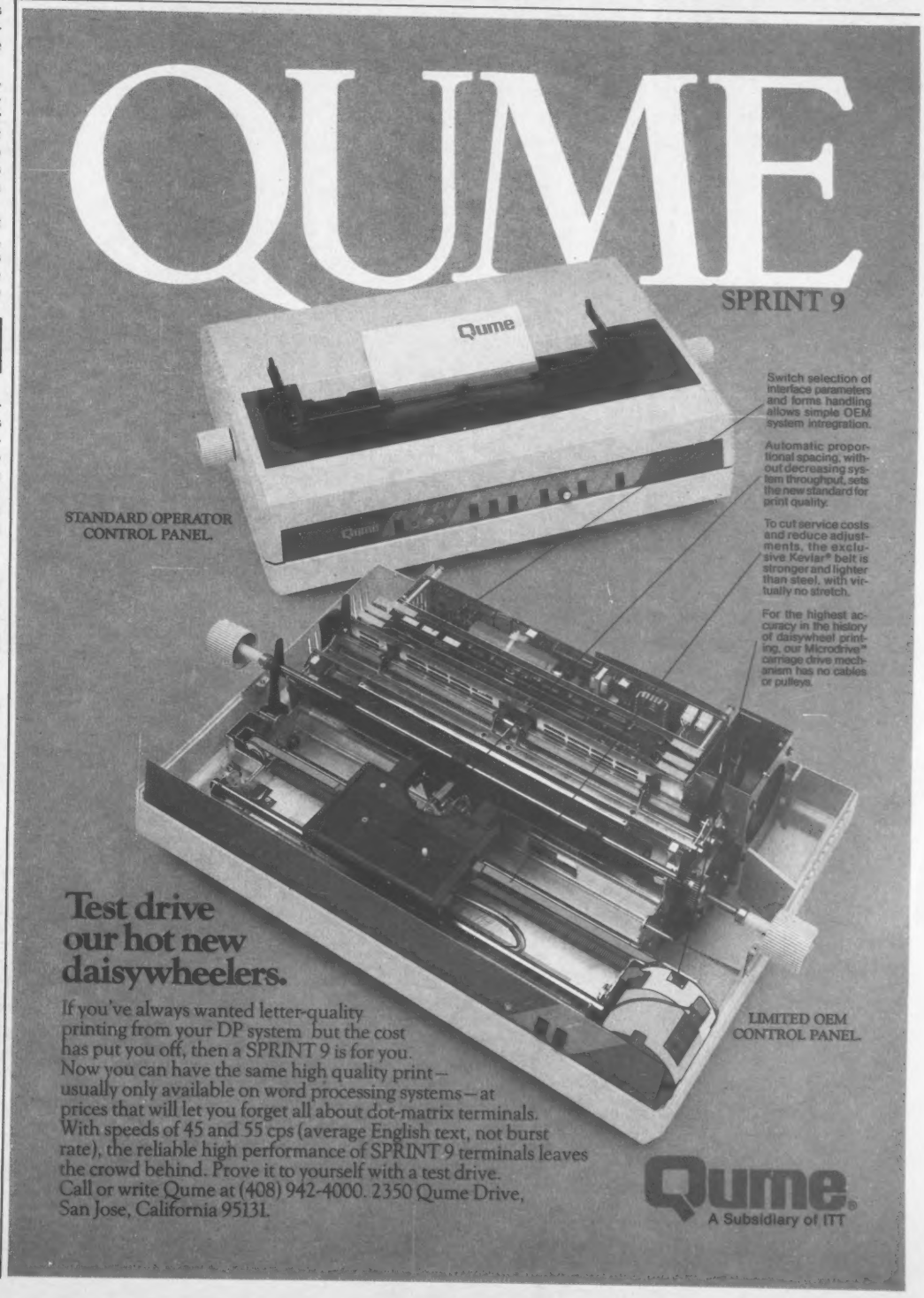
Ernest Jarvis & Co. has established a wholly owned subsidiary, Computer Environments, Inc., to broaden its role in the DP support arena. The new company will be based at 78 Empire St., Newark, N.J. 07114.

— — —

After acquiring Perkin-Elmer Corp.'s Memory Products Division, Cipher Data Products, Inc. has reorganized into three new divisions: the San Diego Division, the Garden Grove Division and the OEM Marketing Division.

— — —

Fujitsu America, Inc. has reduced prices on its 256K-bit memories by 20% due to heavy worldwide sales of its bubble memory cassettes and devices.


QUME
SPRINT 9
Qume
STANDARD OPERATOR CONTROL PANEL.
Switch selection of interface parameters and forms handling allows simple OEM system integration.
Automatic proportional spacing, without decreasing system throughput, sets the new standard for print quality.
To cut service costs and reduce adjustments, the exclusive Kevlar® belt is stronger and lighter than steel, with virtually no stretch.
For the highest accuracy in the history of daisywheel printing, our Microdrive™ carriage drive mechanism has no cables or pulleys.
LIMITED OEM CONTROL PANEL.
Test drive our hot new daisywheelers.
If you've always wanted letter-quality printing from your DP system but the cost has put you off, then a SPRINT 9 is for you. Now you can have the same high quality print—usually only available on word processing systems—at prices that will let you forget all about dot-matrix terminals. With speeds of 45 and 55 cps (average English text, not burst rate), the reliable high performance of SPRINT 9 terminals leaves the crowd behind. Prove it to yourself with a test drive. Call or write Qume at (408) 942-4000. 2350 Qume Drive, San Jose, California 95131.
Qume®
A Subsidiary of ITT

Introducing

Sybercache

Intelligence and Architecture to Break the I/O Bottleneck

Industry-standard DASD architecture is proving inadequate for many high performance systems. The problem is the growing disparity between processor speed and disk response time.

The resulting bottleneck can throttle performance, inflate operating costs and hinder productivity.

That the bottleneck can be broken has been consistently demonstrated by STC's remarkable stream of DASD innovations.

The latest of these is Sybercache: the STC 8890 Intelligent Disk Controller.

It breaks the I/O bottleneck by eliminating deficiencies in the communications path between CPU and disk storage.

Coupled with STC's current family of 8350, 8650 and 8360 disk drives, Sybercache delivers the I/O response and transfer rates demanded by today's fastest processors.

As STC's new generation 8380 drives come on line, Sybercache will deliver even more performance for still greater productivity.

More Than Cache

By alleviating path queuing problems, eliminating mechanical delay and driving transfers at full channel speeds, Sybercache reduces I/O times by as much as 75%.

Central to its performance is the Sybercache manager--a fast microcomputer that evaluates host channel programs then directs data flow according to the performance needs of each data set. It determines which operations should be directed to disk, which to cache, and how much buffer space each requires--on a case-by-case basis.

Easy Implementation

Sybercache is fully hardware and software compatible with 4341, 370/135-168, 3031-3081, or equivalent CPUs. And since the cache manager handles most tuning needs automatically, implementation is straightforward.

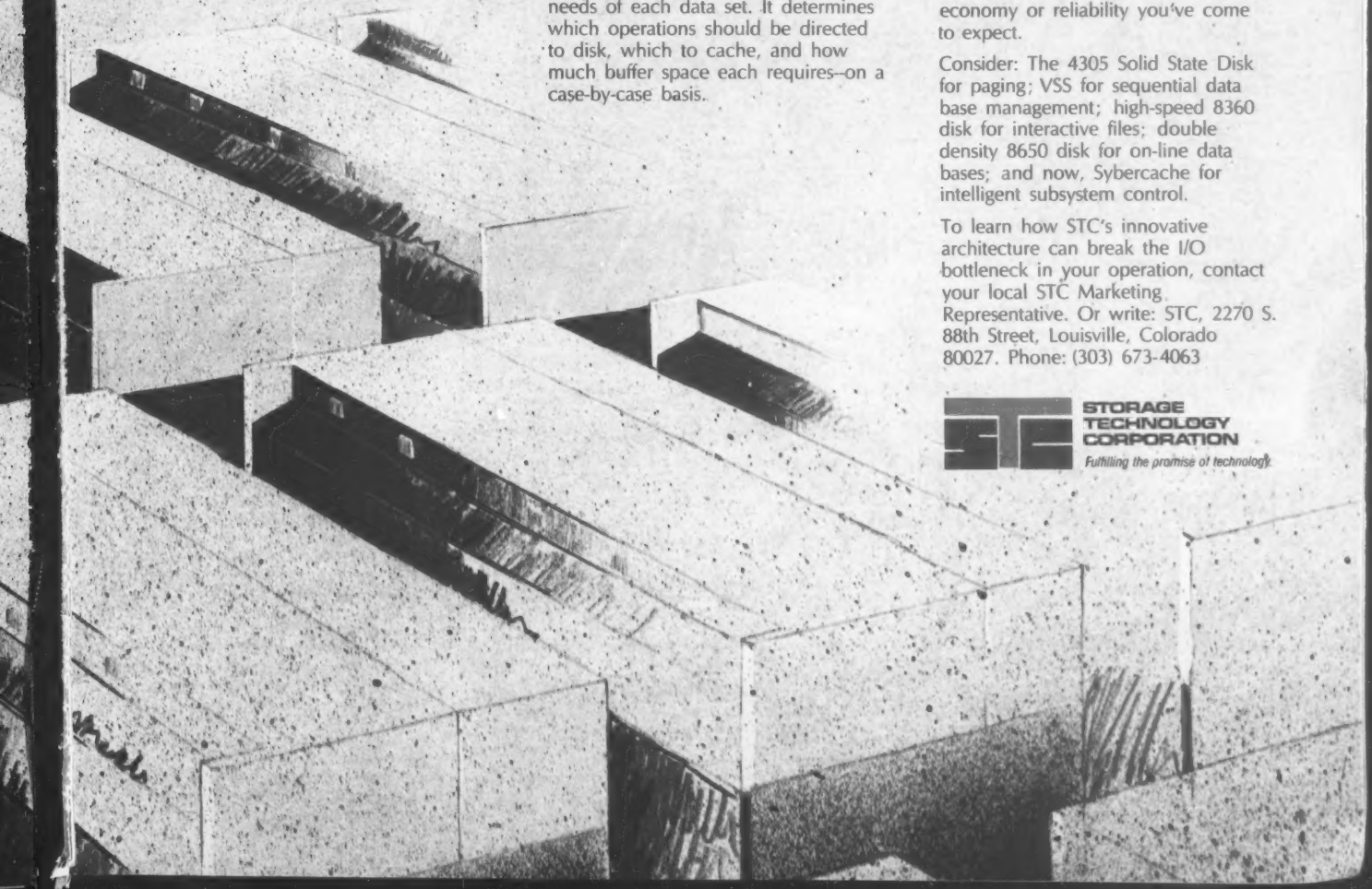
Sybercache comes with 1.5 Mbytes of buffer storage, two storage directors, two-channel switch, and maintenance processor. Field installable options include four-channel switch and 3, 6, or 12 Mbytes of buffer.

Versatile Architecture

Versatility is the principle strength of STC's architecture. Specific products designed to solve specific problems result in consistently high throughput without relinquishing the compatibility, economy or reliability you've come to expect.

Consider: The 4305 Solid State Disk for paging; VSS for sequential data base management; high-speed 8360 disk for interactive files; double density 8650 disk for on-line data bases; and now, Sybercache for intelligent subsystem control.

To learn how STC's innovative architecture can break the I/O bottleneck in your operation, contact your local STC Marketing Representative. Or write: STC, 2270 S. 88th Street, Louisville, Colorado 80027. Phone: (303) 673-4063



STORAGE TECHNOLOGY CORPORATION

Fulfilling the promise of technology.

Mass. Can Keep Wang's Gift Of 30 Computers, Council Says

BOSTON — Massachusetts Gov. Edward J. King recently faced a problem after the state accepted 30 computers worth $3 million from Wang Laboratories, Inc. for the state's public colleges [CW, Jan. 25].

For a while, it looked as if the state would have to give the equipment back.

Dr. An Wang, president of Wang Labs, is a member of the state's Board of Regents and therefore considered a "special employee" of the state. As a result, his donation was questioned under the state's conflict of interest laws.

According to Greg Jarboe, a vendor spokesman, the problem arose not in the gift itself, but in Wang's inevitable competition for the equipment's service contract. Because the service agreement was not donated, Wang would be paid for any services rendered.

Since Dr. Wang is a major stockholder in Wang Labs, this payment would qualify as a conflict of interest under the state's law.

The Governor's Council was asked to consider the problem and waive the regulation, Jarboe said. In a unanimous decision by the council handed down last week, it was determined that the state will keep the equipment, Jarboe said.

DEC Posts 42% Increase In Second-Quarter Earnings

MAYNARD, Mass. — Digital Equipment Corp. posted a 27% gain in revenues and a 42% increase in earnings in its second quarter, compared with the year-ago period.

DEC earned just over $99 million or $1.79 per share in the quarter, compared with $69.9 million or $1.43 per share in fiscal 1981's second quarter.

Revenues for the period reached $965.8 million, compared to revenues of $762.3 million in the same period of a year ago. For its first six months, DEC's revenues totaled $1.8 billion, up from $1.4 billion for the first half of the last fiscal year.

Earnings for the first half reached $187.8 million or $3.39 per share, compared with $126.1 million or $2.60 per share earned in the comparable period last year.

Although DEC expects to see a continuing moderation in the pace of its business, the company noted it will spend about 8% of sales on research and development during the current fiscal year. Capital spending should reach $500 million.

The firm said it has cumulatively shipped 340,000 computers.

Flexible Tools Its Strategy

(Continued from Page 129)

this decade. The company's claim to fame is its strategic software technology.

Walker Interactive's proprietary systems architecture separates complex high technology functions from Cobol applications programs, according to the company. The resulting applications modules are streamlined and transportable across many hardware, teleprocessing monitor and data base management systems environments.

According to Jeffrey Walker, founder of Walker Interactive, strategic software means simplifed applications code, yet sophisticated, integrated and interactive systems that are user controlled via an Interactive Systems Customization Facility.

The benefits of IIFS are reputed to be more timely data, lower costs because of reduced paper handling, a better quality of service, the elimination of data errors and thus higher productivity.

More Flexible

IIFS was more flexible. For example, the products were portable from one computer to another. The family was designed to take into account obsolescence so that, for instance, the same program could be used in the IMS/DBDC environment as in the radically different CICS/Vsam arena.

"People like to do things at terminals. They're really attracted to a high-technology solution," Walker said. "The user is motivated to do things at a terminal he wouldn't do otherwise."

According to the company, it has come up with a way of developing applications systems that has embodied in it a strategy that takes into account long-term planning needs. The aim is to substantially cut down on the amount of modification that needs to go into future products.

Large-systems software, Currier claimed, was not suitable for the rapid changes users sought in a fast-growing environment. Program changes were cumbersome, Currier said, and costly.

The lack of skilled technicians, the rising cost of technical personnel and the increasing complexity of software environments has led to high turnover and a difficulty in managing production among end users.

Walker Interactive claims to have found at least one potent answer to the problem.

The HiNet™ Local Computer Network Because man was not meant to work alone

One of a company's biggest problems can be getting the right hand to know what the left hand is doing. Now, with the HiNet Local Computer Network, you can install a computer system that puts each person in touch with what everybody else in the office is doing. It's the best way yet to get everybody working together.

A computer on every desk ends backlogs.

Some computers are so expensive that they force you to put all your computing dollars in one machine. In contrast, HiNet is so inexpensive that it costs little more than a good typewriter! You can put a computer on every desk that needs one! What's more, you can add peripherals wherever they're needed.

More done individually—better teamwork, too.

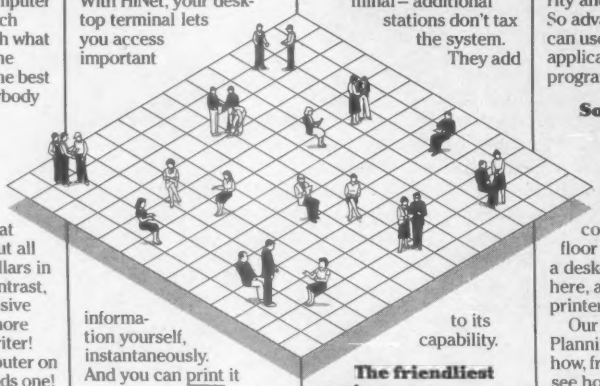
With HiNet each desk-top work station interconnects with a Master Station's abundant central file storage – as well as with all other work stations. You get maximum computing use from your own station as well as get information to – or from – the Master Station – or any other station on the network.

Instant response from all over the building.

With HiNet, your desk-top terminal lets you access important information yourself, instantaneously. And you can print it on any one of the network's shared printers. There's no need to leave your desk or wait for someone else to assist you!

No growing pains. Period.

Here, at last, is a system you can't outgrow. With HiNet you can start as small as just two work stations. Add up to 250 stations anywhere you want within your building. And since each low-cost station is a complete computer – not just a terminal – additional stations don't tax the system. They add to its capability.



The friendliest system ever.

HiNet is so compatible that you can enjoy this advanced network technology and continue to use terminals you may already have!

HiNet uses standard interfaces so you can "talk" on the network and use almost any printer or other peripheral.

HiNet provides all the hardware – and software – you need for a complete, proven local computer network. Advanced systems' utilities provide the utmost in both data security and system integrity. So advanced, yet HiNet can use virtually any CP/M applications software program in the world.

So simple you can plan it yourself.

HiNet is so well designed that you can actually lay out a network according to your office floor plan. It's easy – add a desk-top work station here, another one and a printer there.

Our Local Network Planning Kit will show you how, free. Send for it. You'll see how a local computer network can help you accomplish more and share information with every department in your office – more easily and efficiently than ever before.

Digital Microsystems™

NOW WITH THOUSANDS OF INSTALLATIONS AROUND THE WORLD.

CP/M is a registered trademark of Digital Research.
Multibus is a trademark of Intel Corporation.

Free Network Planning Kit

I must admit, I'm interested. Please send me a Local Network Planning Kit so I can have a clearer understanding of how a computer network could work for me. I have checked the box below that best describes my facility.

PLEASE PLACE YOUR BUSINESS CARD HERE

- ☐ 1,000-2,500 Square Feet
- ☐ 2,500-10,000 Square Feet
- ☐ 10,000-30,000 Square Feet
- ☐ I am a Systems Dealer. Please send ISO/OEM information.

Digital Microsystems™

Corporate Offices: 1840 Embarcadero, Oakland, CA 94606 (415) 532-3686 TWX 910-366-7310
England & Europe: Extel House, East Harding St., London EC4P-4HB 01-353-1080 Telex 23721

HINET IS COMPLETE HARDWARE AND SOFTWARE LOCAL COMPUTER NETWORK TECHNOLOGY.
HiNet utilizes 8 or 16 bit processors in single board or Multibus™ configurations; advanced memory management and data storage; high-speed local network data and telecommunications; real time processing redundancy and back-up capabilities; multi-level data security provisions; end-to-end diagnostics and automatic error correction routines; international support and comprehensive training. For a catalog and specifications contact Digital Microsystems. We will be happy to demonstrate how effectively a HiNet Local Computer Network could work for you.

Can Dallas Support Two Computer Centers?

DALLAS — The Dallas Market Center has revealed details of its plans for Infomart, a one-million-sq-ft, six-story computer trade center that will offer permanent showroom and trade show facilities.

Slated for a late 1983 opening, Infomart is being developed by Trammell Crow Co., a real estate developer that created the Dallas Market Center, a seven-million-sq-ft trade complex currently housing the Home Furnishings Mart, Decorative Center and Apparel Mart, among other permanent trade facilities.

Another real estate developer, Leggat McCall & Warner, is planning a facility similar in purpose to Infomart. To be called the International Information Center (IIC), it will be located in Las Colinas, a Dallas suburb.

Groundbreaking for the IIC was scheduled for this month, but Leggat McCall & Warner is now deciding whether to move up the date for the start of that project, according to Brad Griffith, executive vice-president at the Boston-based development firm.

Although both developers have said the Dallas area can support only one computer trade center, both real estate firms are still adamant about proceeding with their plans [CW, Oct. 26].

Computer trade centers appear to be an idea whose time has come. The famed Chicago Merchandise Mart opened its Business Products Center last month [CW, Jan. 25], and a Massachusetts development firm has announced plans for an $85-million technology center to be located in Boston's historic waterfront area.

As planned, Infomart will offer manufacturers, resellers and independent selling organizations — including consulting groups — showroom space at an average of $25 per sq-ft, according to Bill Winsor, general manager of Infomart.

The facility is being constructed with computers in mind. Infomart will feature 110% of normal airconditioning service, 30 watts per sq-ft of electrical service and optional access flooring.

Exhibition space for trade shows is an integral part of the plans for Infomart. More than 1,000 booths can be accommodated within the exhibit area, Winsor said.

To date, Infomart has scheduled 11 information processing shows to be held at the facility over the next five years. Quarterly applications-oriented trade shows designed for vertical markets such as health, insurance and office automation are also planned.

In addition, Infomart will provide facilities for user meetings, a separate warehousing and distribution service and a full-time staff of press relations and advertising specialists.

Executive Corner

• Wade Meyercord has been appointed president of Memorex Corp.'s newly created Storage Equipment Manufacturing and Development Group. Also at Memorex, Michael Haltom has been named vice-president of business development and Thomas Stevens has been named vice-president of finance.

• Philip A. Harding has been named president of the Remex Division of Ex-Cell-O Corp.

• James V. Cappuccio has been appointed vice-president of marketing at Systems Technology Group, Inc.

• General Automation, Inc. has announced the appointment of two computer division vice-presidents. They are John J. Cahill, in charge of strategic planning, and John H. Warren, who will head up the Application Services Division.

• Scott Holt has been promoted to vice-president of sales for Seagate Technology.

• Robert B. Laurence has been named vice-president of sales at Rexon Business Machines Corp.

• Modular Computer Systems, Inc. has appointed Benjamin L. Harrison senior vice-president in charge of marketing and business development.

• James A. Unruh has joined Burroughs Corp. as vice-president, financial operations.

• Jim Stenzel has been named to the position of vice-president, engineering, at Hastech, Inc.

• NCA Corp. has named Michael J. Long to the newly created position of executive vice-president.

• Dr. Richard C. Joy has been named vice-president of research and development for American Microsystems, Inc.

• Chester S. Kozlowski has been named vice-president of finance at Cambrian Systems, Inc.

• Infodata Systems, Inc. has appointed Dorrance W. Lamb as vice-president/controller.

• T.G. Connor Jr. has rejoined Affiliated Computer Systems as senior vice-president and manager for the company's northern region.

• John K. Sheehan has been appointed to the newly created position of vice-president, consulting services, at SMC Proprietary Systems, a subsidiary of Science Management Corp.

• Peter W. Cassady has joined Ramtek Corp. as vice-president of marketing.

INFORMATION ENGINEERING

FOURTH GENERATION METHODOLOGIES

Information engineering is a planning strategy which helps management, staff, and the resources groups to communicate more productively. Information engineering is vital to ensure that management obtains the maximum benefit from the dollars spent on collecting and using information. Attend our public or inhouse courses now, and learn techniques which allow business professionals to translate corporate and management objectives into concise business models essential to achieving these objectives. The formal steps of information engineering can be used to expose areas where organizational effectiveness can be improved.

INFORMATION ENGINEERING OVERVIEW 2 DAYS

These methods provide formal techniques which bridge the gap from business systems planning to physical implementation. Applies also to the information center. Interfaces with the structured techniques.

Boston Apr 13-14 Washington Apr 15-16 Chicago Apr 19-20
San Francisco May 3-4 Toronto May 10-11 Los Angeles Jun 14-15

INFORMATION ANALYSIS WORKSHOP 4 DAYS

The workshop focuses on evolutionary techniques which permit management and their support staff to derive concise business models while refining objectives and policy statements. The vital role which management has in articulating information requirements is clearly demonstrated through case-study.

San Francisco Mar 9-12 Chicago Mar 16-19 Boston Mar 23-26
Toronto Mar 30-02 Los Angeles Apr 5-8 Washington Jun 1-4

PROCEDURE FORMATION WORKSHOP 3 DAYS

Procedure Formation maintains the premise that the business professional is best qualified to extract these procedures and represent them in a form which minimizes the loss of business meaning during implementation by the data processing group. Procedure Formation demonstrates that the business professional's discovery of optimal procedures provides invaluable feedback for resetting and measuring organizational effectiveness.

Chicago Apr 21-23 San Francisco May 5-7 Toronto May 12-14
Boston May 26-28 Los Angeles June 16-18

DATA ANALYSIS WORKSHOP 4 DAYS

A DP driven technique for development of logical data models, which are optimized for response critical transactions. For conversions of existing systems to data base. Defines the current data environment (in conjunction with Information Analysis). Provides the essential bridge from BSP, or structured analysis, to data base.

Boston April 27-30 Chicago May 18-21
San Francisco Jun 8-11 Toronto Jun 22-25

DATA BASE DESIGN WORKSHOP 4 DAYS

This workshop indicates how the business model derived by management during information analysis/procedure formation can be automated where appropriate. The process of transforming a stable, logical data model and its associated user views into a set of physical equivalences is addressed. Data use analysis (methods for charting, grouping and summarizing transactions against the data base) is demonstrated as a powerful means of determining transaction traffic patterns and projecting overall system performance.

Boston Jun 8-11 Chicago Jun 22-25
San Francisco Jun 28-01

Please send me current information on public and inhouse courses

Please send me details on "Information Engineering", by James Martin and Clive Finkelstein

Name _____
Title _____
Company _____
Address _____
State _____ Zip _____ Phone _____

information methods (U.S.A.) CORPORATION
594 TOTTEN POND ROAD
WALTHAM, MA 02154
(617) 890-9000

TECHNIQUES FOR EFFECTIVE MANAGEMENT

ORIGINATORS OF THE INFORMATION ENGINEERING METHODOLOGIES

Vendors Say MIS Managers Key to Micro Evolution

By Robert Batt
CW West Coast Bureau

Success in selling personal computers to large corporations depends in large part on how their proliferation is viewed by the management information systems (MIS) department, microcomputer vendors interviewed recently pointed out.

Arguing that the introduction of microcomputer technology is inevitable, they said MIS managers hold the key to how quickly this latest evolution of the technology will take place.

"Micros are coming and there is no way of stopping them. You can either welcome them or fight them, but come they will," according to John Butler, manager of Apple Computer, Inc.'s national accounts.

While Apple, with its recently reorganized dealer network, has much to gain from the growth of personal computers in business, not everyone is as confident that its marketing strategy will succeed. For example, one of Apple's major competitors claimed there is evidence that large corporations want direct contact with vendors.

"Big companies are very good business because they tend to deal in multiple systems, and a concerted marketing effort is likely to prove worthwhile," a spokesman for Commodore Business Machines, Inc. said. "However, these large corporations have a tendency not to want to deal with a dealer, but with the vendor directly. At the same time, if a vendor sends out a direct sales force to do the job, you risk upsetting your dealer base," he said.

Disappointing Results

The Commodore spokesman, who asked not to be identified, admitted that the company has experienced disappointing results in the U.S. to date compared with its activities in Europe, where demand among large companies is strong. The company recently won a big order from the British Post Office.

"Most of our dealers are afraid of the big companies," the Commodore spokesman noted. "They tend to go to the smaller firms and do not make the concentrated effort at selling to major corporations."

And, he added, "our dealers have not been as aggressive as they might have been in going after this market."

It is this kind of experience that some industry analysts think will also cost Apple dearly in its marketing struggle with IBM's new personal computer.

When Apple announced its marketing reorganization last year it evoked a strong reaction from dealers who feared their role in the company's strategy was being diminished.

High Price to Pay?

Although Apple seems to have reassured its dealer community, some think the price could be high. According to Gib Hoxie, president of Context Management Systems, Inc., a Torrance, Calif.-based systems house, "IBM has thousands of sales people in the field who can be trained to sell its product.

"It is going to take a long time for other companies to compete with that, and this will allow IBM to catch up very quickly with companies like Apple, Commodore and Radio Shack that started out in the personal computer field way before it did," according to Hoxie.

The IBM approach is to sell directly to the end user in large corporations and confine its retail outlets to smaller customers. For this approach to succeed, industry analysts argue that MIS managers in large corporations need to be won over, Hoxie explained.

This is not likely to be an easy job. As Hoxie said, "The majority of MIS managers believe the personal computer is at least 50% snake oil, that there is a lot of hype surrounding it and that when it winds up on the manager's desk it will not be fully used because it cannot deliver on its promise."

MIS managers, he claimed, therefore are very wary of lending their support to something that they feel might fail.

Apart from the technical aspects of micros, their widespread use threatens power relationships in the big corporations.

Control Issue

Ultimately, the issue is seen as being one of control — Will the MIS department, which has traditionally supervised the company's information requirements, continue to have the last say? Or will department heads, frustrated by the failure of MIS to satisfy their applications needs, seize the chance to assert their independence?

Hoxie, a former management consultant with Booz Allen & Hamilton, Inc., commented, "DP managers have a very real concern that it is dangerous to unleash power in the hands of managers who have not been trained to qualify data."

TONE 3

High Performance — Low Overhead

TSO for VS1

Compare these Features:

- Identical TSO command syntax (we use their manuals)
- Full TSO CLIST capability
- TSO TEST command support
- SPF support
- No retraining for MVS/TSO
- Full Screen Edit capability
- Dynamic allocation
- Hot internal reader
- Review output at the terminal
- Interactive program execution
- On-line testing and compilation
- No user swapping
- Multiple users per partition
- Shared Subpools
- Re entrant code
- Enhanced 3270 support
- Full ASCII terminal support
- Powerful Sys. Prog. package
- Standard VS datasets (No intermediate programs required)
- Programmable PFK support
- Run TSO packages under VS1
- THE ONLY TRUE TSO FOR VS1!
- WORLD WIDE SALES AND SUPPORT

TONE SoftwareCorp

Call or Write for Details

1735 SO. BROOKHURST ST.
ANAHEIM, CA 92804
PHONE: (714) 991-9460
TELEX: 181592

BEAR STEARNS

This announcement appears as a matter of record only.

$2,000,000

The David Jamison Carlyle Corporation

This financing has been arranged privately.

Bear, Stearns & Co.
Members New York Stock Exchange, Inc.

New York/Atlanta/Boston/Chicago/Dallas/Los Angeles/San Francisco
Amsterdam/Geneva/Hong Kong/London/Paris

ENTRY LEVEL TRAINING FOR UNDER $50 PER DAY

Subjects taught in a learning-by-doing atmosphere provide the skills necessary to design, code, debug and execute COBOL applications programs.

Chubb Institute's quality training has been a standard in the DP community for over a decade. Classes are scheduled days and evenings. Why not join our family of satisfied clients?

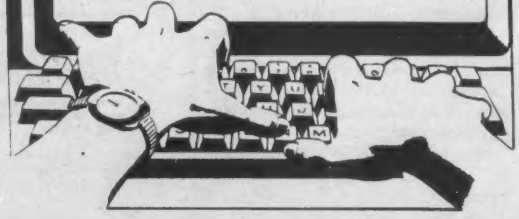
Call now for more information on this or any other course offered by Chubb Institute.

CHUBB

"WHEN WE SAY TRAINING WE MEAN BUSINESS"

CHUBB INSTITUTE/ADVANCED TRAINING CENTER
480 Morris Avenue, Summit, NJ 07901

(201) 467-7680



Vendors Face Snags Selling Micros to MIS

(Continued from Page 123)

of the personal computer vendors shows this concern to be justified. While MIS department cooperation in the introduction of micros into large corporations is welcomed by the vendors, it is not seen as a necessary prerequisite for doing business with these companies.

In response to the question, "How do you propose to market your personal computer equipment to large organizations?," IBM's response was typical.

"It depends on the individual customer requirements, and they vary," an IBM spokesman said from Armonk, N.Y. "For example, sometimes we may channel our inquiries through the DP department. On other occasions, the system might be useful for functions that go well beyond the MIS department — for example financial applications — and in that case we may go to the appropriate department head instead."

IBM does not use its retail outlets to market personal computers to the large corporations, but instead uses its sales force to represent its product to potential customers. This means that department managers in areas such as marketing, production and finance are being made more aware than ever before of the potential of micro devices in their specialized areas of work.

Other operators are adopting the IBM approach. Morris Decisions Systems, Inc., for example, a Manhattan-based dealer in Apple computers, is actively infiltrating the potential user base.

High-Volume Sales

Although it has a retail store, the company is not particularly interested in over-the-counter sales. Instead it is geared towards high-volume sales in large corporations and financial institutions.

The company, which has been shipping Apple systems for one year, said individual managers are recognizing the power that a personal computer could give them.

"Some of these department heads are coming straight to us and bypassing the MIS department, either because it is not necessary to contact MIS or because they simply don't care," Tony Morris, president of the Morris Decision Systems, said. "The people who are responsible for information systems are increasingly coming to recognize that there is going to be a powerful computational device out there which the end user is going to have direct access to."

According to several vendors, these developments are being seen by MIS departments as a threat to their traditional position as the technical resource center in organizations. One vendor told CW that its sale of personal computer systems to a large public utility had run into difficulty because the MIS department had insisted on getting involved and had succeeded in delaying purchase of the equipment.

"We estimate that for every day this company is delayed in having this system, it is losing $27,000. There is no doubt that there will be situations where a company will fare more effectively than its competitors in the market because it has installed micro systems," a spokesman for that vendor said.

According to the vendors, one way in which the MIS department is attempting to wrest control of these machines include the setting up of a unit to oversee the areas where personal computers may be used. MIS departments are also claiming the right to have the final purchasing power rather than letting the purchasing department itself have that power.

"For many MIS managers, the central issue has become one of control," Tony Morris said. "Often times, MIS doesn't know enough about micros to answer the questions of their user departments."

Many vendors see the MIS department taking on an increasingly consultative role, with its primary job being to ensure compatibility of microcomputers in a distributed processing environment.

High-quality graphics. Built-in hard copy. Under $5000.

It's hard enough to imagine getting sophisticated graphics at such a low price—let alone getting an integrated printer to go with it. But then again, you've never seen anything like the HP 2623 graphics terminal.

The display's the thing.

The HP 2623 gives you more than just an extremely sharp screen image. With its advanced graphics features, you can shade different areas of a chart or graph with different patterns, or even draw entire pictures in a matter of seconds.

You can vary the size of the text, rotate it, or make it italic—in any of seven languages. And with a variety of software packages available (including PLOT 10 from Tektronix), you get a remarkable degree of flexibility in such a low-cost terminal.

The 2623 has two independent memories—for graphics and alphanumerics—so you can talk to your computer without disturbing your graphics display. And if you need hard copy, the thermal printer can dump it out in less than 40 seconds.*

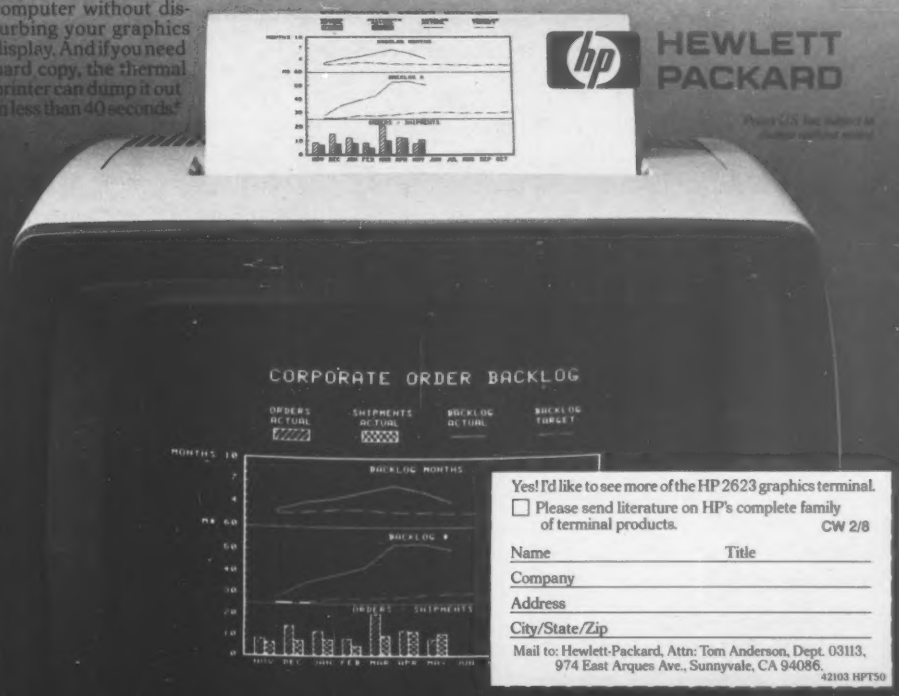
The HP 2623 works with computers from most major manufacturers. But no matter what system you use it with, HP's worldwide service organization can provide you with the advice, documentation and support you need.

If you'd like to see an eye-opening demonstration, contact your local HP sales office listed in the White Pages. Or just return the coupon.

Get a clear picture of what business graphics can do for you at Productivity '82. Watch your newspaper for more details.

*The HP 2623 is available without hard copy for $3750.

When performance must be measured by results.



Yes! I'd like to see more of the HP 2623 graphics terminal.

☐ Please send literature on HP's complete family of terminal products. CW 2/8

Name Title

Company

Address

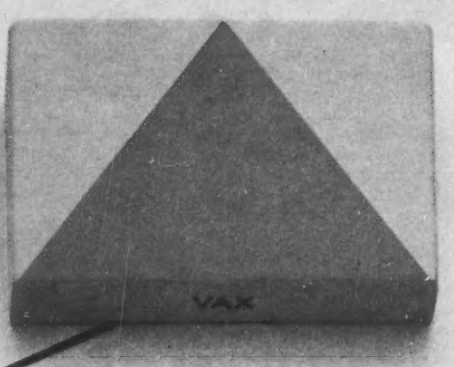
City/State/Zip

Mail to: Hewlett-Packard, Attn: Tom Anderson, Dept. 03113, 974 East Arques Ave., Sunnyvale, CA 94086.

42103 HPTSO

Networking standards.

Nobody keeps your options open like Digital.



By now, everyone understands the need for standard communications protocols. Without them, an electronic Tower of Babel would surely ensue. But there have to be different standards for different networks. A local-area network is different from a wide-area network. A public network is different from a private one.

No single universal standard has emerged. Nor is one likely to. There are simply too many diverse networking environments, each fulfilling specific, mutually exclusive needs.

That's why Digital is committed to supporting and, in fact, actively promoting the more important standards now surfacing in the various environments.

Our goal is to offer our customers a range of standards to achieve any combination of networking objectives. And we've been pursuing that goal for many years.

A forward-thinking strategy.

When we first developed our networking architecture, we understood the need for flexibility. We consciously adopted an architectural strategy that would allow our networking software to work freely with a wide range of protocols, including some that didn't even exist at the time.

The success of that strategy is now becoming apparent. As more vendors enter the networking field, Digital is uniquely positioned to offer compatibility with the emerging protocols. We've gone farther than anyone to assure that your options are open.

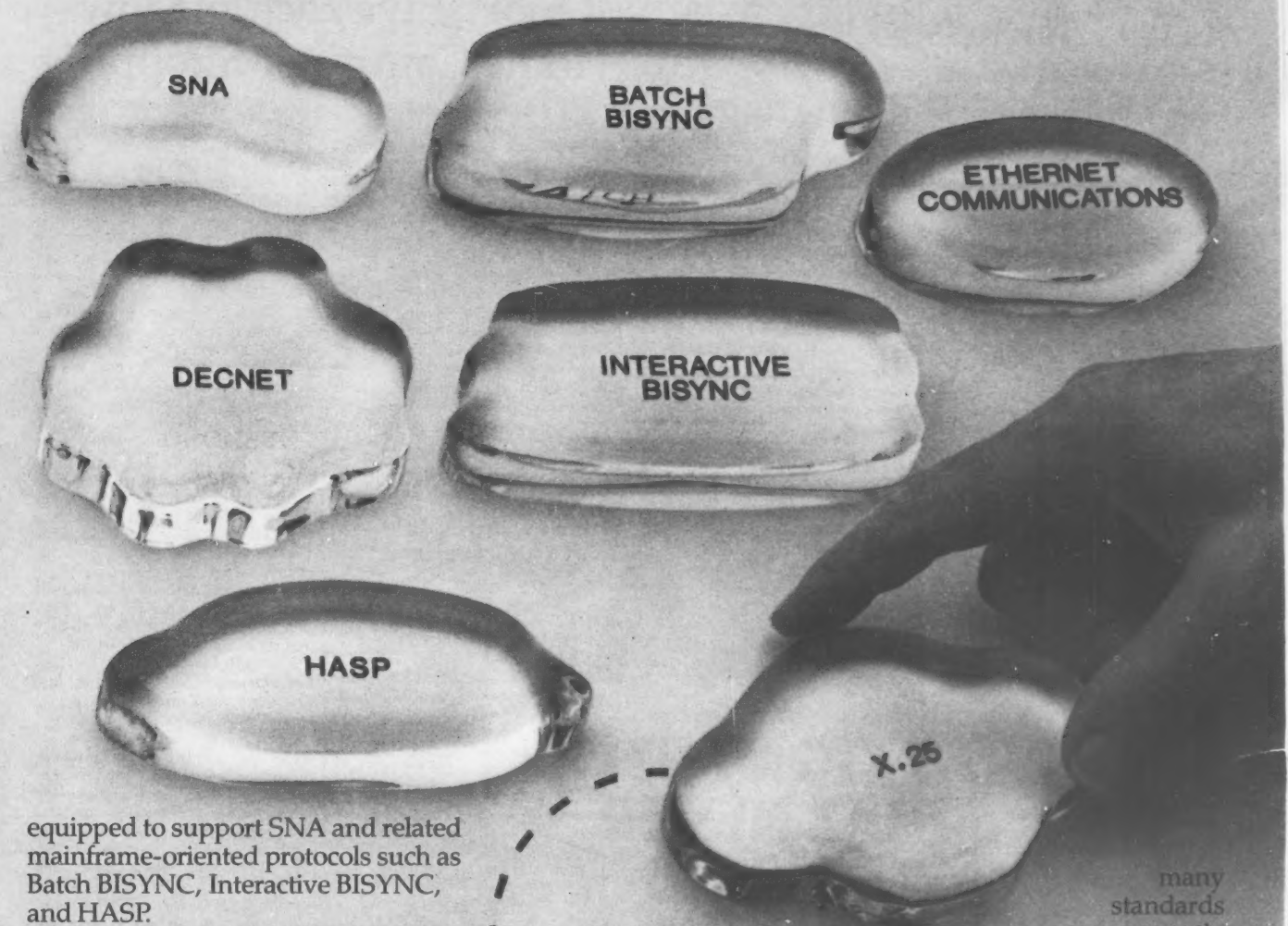
X.25 and other public networks.

Digital offers the X.25 protocol for use with public packet-switched networks such as Datapac (Canada), Transpac (France), and PSS (U.K.).

But when used with our computers, X.25 is much more than a simple link. We can provide you with the higher-level protocols that will take your systems beyond mere communications and into the sophisticated functionality that has made us a leader in networking software.

Hierarchical networks.

Even though we prefer to implement more flexible distributed networks, we are amply



equipped to support SNA and related mainframe-oriented protocols such as Batch BISYNC, Interactive BISYNC, and HASP.

Local-area networks.

Digital is one of the original sponsors of the Ethernet™* specification that has been adopted by a number of computer, semiconductor, and office equipment manufacturers. We recognized early on the need for highly reliable local-area networks. We were in on the ground floor of the definition, development and, now, the implementation of the Ethernet specification.

Distributed data processing networks.

DECnet,™ Digital's proprietary networking software, is based on a layered architecture. This is the same architectural approach followed in the model proposed by ISO. Our DECnet offers a wide range of quality networking products, products that allow such sophisticated options as adaptive path routing, down-line loading, and enhanced network management capabilities.

And so on.

We have listed a few of the many standards we are currently supporting. There are more. But even more important than the number of protocols is the attitude we have toward them. We are determined to help you meet any kind of networking objective. And our capabilities in that regard are as far-reaching as they are farsighted. So if you're planning a network, don't make the mistake of planning just for the present. Talk to the people who can meet your current needs and still keep your options open for the future. Talk to us.

Digital Equipment Corporation, 129 Parker Street, Maynard, MA 01754. In Europe: 12 av. des Morgines, 1213 Petit-Lancy/Geneva. In Canada: Digital Equipment of Canada, Ltd.

©1982, Digital Equipment Corporation

*Ethernet is a trademark of Xerox Corporation.

digital

We change the way the world thinks.

Nickels $ Dimes

NCR Corp. has raised its quarterly dividend on its shares of common stock from 55 cents to 60 cents, payable on April 30, to shareholders of record on March 19.

$ $ $

Auto-Trol Technology Corp. will increase the company's common stock from 4 million shares to 10 million shares.

$ $ $

Hewlett-Packard Co. has declared a quarterly cash dividend of 6 cent/share on its common stock, payable April 14 to shareholders of record on March 24.

$ $ $

Honeywell, Inc. has authorized the repurchase on the open market of one million shares of its common stock.

$ $ $

Iomega Corp. has raised $8 million in its third round of private capital investment.

$ $ $

IBM has declared a regular quarterly cash dividend of 86 cent/share of common stock payable March 10 to stockholders as of Feb. 10. It was also announced that the company's stockholders meeting will be held April 26 in Jacksonville, Fla.

$ $ $

Cognitive Systems, Inc. has just received $1.1 million in research and devolopment funds from Abraham Financial Corp. of Seattle.

Report: Five Factors Slow Home Computer Shopping

By Brad Schultz
CW New York Bureau

BOSTON — Home data terminals could let consumers shop from their living rooms right now, but the next few years will bring a limited range of electronic shopping services to the home, a market research company said in a new report.

According to the Yankee Group here, five factors will keep home terminal shopping from taking a broad scope before the late 1980s:

- Technology has yet to allow consumers detailed sensory information on products via home terminals or communicating personal computers.
- Consumers shy away from buying expensive, offbeat items "sight unseen."
- Delivery of items ordered from the home takes too long.
- Service after the sale is lacking.
- Consumers have no opportunities for social contact and "recreation" in shopping from the home.

However, the Yankee Group predicted that the next generation of electronic shopping systems will hit by 1989, largely wiping away these five factors and launching a new era of merchandising. To do this, the projected systems must overcome the technical limitations of existing video-based shopping systems, tie in with entertainment programming and be supported by credible post-sale service.

In "Teleshopping: The New Electronic Marketplace," the Yankee Group listed what consumers may expect to cross home data links in the near term. First, there are information-based services, the report stated, where instant delivery of a tangible end product is unnecessary. Examples include sports tickets, off-track betting and classified advertising.

With information-based services, broadcasters, cable operators and electronic publishers would act as agents for the source organizations.

A second near-term prospect for electronics consumers is information-based products, the Yankee Group continued. Such products are electronically deliverable in real time or may be downline-loaded from the suppliers' mainframes. Examples include video games and "pay-per-view" sporting events, the Yankee Group said.

Then there are low-unit-value specialty items. Tagged at less than $40, such products might include record albums, cookware sets, inexpensive watches, calculators and modest gifts. These are the sort of goods presently offered on late-night television for telephone ordering, the Yankee Group explained.

Major Players

Major players in the electronics shopping arena were said to include AT&T; Sears, Roebuck & Co.; CBS, Inc.; American Express Co.; and the major cable carriers. AT&T has struck a truce with newspaper publishers, who are peeved by the prospect of "electronic Yellow Pages" cutting into their sales of advertising space, the Yankee Group declared.

Terms of the compromise, according to the market research report, are:

- Via home terminals, Bell may offer consumers the time of day, weather forecasts, White Pages directory information and Yellow Pages features such as names, addresses and business identifications, but only through a separate subsidiary created solely for that purpose.
- Bell may not originate price lists or advertising — even of the sort now featured in some Yellow Pages ads — except to home shoppers in communities served by non-Bell telephone companies.
- Bell may be a "transmission partner" of news/advertising outlets, including newspapers.

FAILSAFE™

THE COMPUTER THAT NEVER LETS YOU DOWN.

A NON-STOP COMPUTER FOR $58,000

Until now, users of on-line computers have had to accept disruptive computer failures or pay the price of expensive, redundant back-up systems.

Now there's the FailSafe™ system . . . a non-stop computer at an affordable price.

The system includes dual data bases, dual central processors, one workstation with backup, dual disk drives, failsafe end of day backup facilities and a printer.

The FailSafe system supports up to 32 intelligent processor-based workstations. With an architecture specifically designed for on-line applications. With innovative software that's structured and automated. Software that prevents downtime caused by software errors.

So, if you're looking for an affordable failsafe computer, fast on-line response time and advanced software development tools, just remember one thing — our name. FAILSAFE.

OEM DISCOUNTS AVAILABLE
50 QUANTITY PRICE — $46,000 EACH

Call or write for the full story on how FailSafe can help your business.

DOSC, Inc.
175 I.U. Willets Road
Albertson, N.Y. 11507
(516) 621-6640

dosc FAILSAFE™

Name _____
Company _____
Address _____
City _____
State _____ Zip Code _____
Telephone _____

Orders & Installations

Recent orders at Honeywell, Inc. include one from Jones & Laughlin Steel Corp. of Pittsburgh, Pa., for the DPS 8/70 computer system valued at $4.5 million; another from Imed Corp. of San Diego for the DPS 8/20 large-scale computer and the Honeywell Manufacturing System software; and one from the Stephen F. Austin State University in Nacogdoches, Texas, for the two-processor Honeywell Level 66 DPS B-3 large-scale computer, which costs around $1.4 million.

Business Controls Corp. has received three orders for its Cobol Newspaper Business System, which runs on Digital Equipment Corp. computer systems. The orders came from the *Indiana Gazette*, Pa., Connecticut Newspapers, Inc. and The Palm Springs, Calif., *Desert Sun*.

Cray Research, Inc. will install a Cray-1/S2300 computer system at the Chevron Oil Field Research Co. in Lahabra, Calif. The system is valued at $11.5 million.

Planning Research Corp. has received contracts totaling some $9.4 million for computerized real estate multiple listing services.

Hazeltine Corp. has been awarded several contracts totaling $1.5 million for its Ticcit computer-based training system. The orders came from McDonnell Aircraft Co., the Douglas Aircraft Co. and the British Columbia Telephone Co.

Perkin-Elmer Corp. has been awarded a contract from Image Graphics, Inc. to provide a quantity of its Series 3200 32-bit superminicomputers to aid exploration efforts in locating new energy sources.

National Data Communications, Inc. has received several contracts for its integrated and automated real-time patient information system from Mercy Health Center. Mercy is comprised of three hospital units located in Dubuque, Iowa, and Racine, Wis.

Filene's Department Stores have signed an agreement to purchase 25 touch-sensitive CRT terminals from Interaction Systems, Inc. for its "gift registry" service.

Comarc Design Systems has been awarded a contract for 11 systems valued at more than $1 million by Boise Cascade Corp.'s timber, wood and paper groups.

T-Bar, Inc. has received an order for two 3915 peripheral switching systems, estimated at $170,000, from Securities Industry Automation Corp.

Computer Sciences Corp. has received a $5 million contract from the city of Chicago to provide a communications system for a rapid transit rail extension to O'Hare Airport.

Peninsular Steel Co. has ordered a Honeywell, Inc. DPS 7/35 medium-scale computer and 10 Honeywell DPS 6 small-computer systems. The total order is valued at approximately $1 million.

New England Telephone Co. plans to purchase 15 Timeplex, Inc. Series II microplexers estimated to be worth $120,000. The multiplexers will be used in the service order distribution network.

ITT Courier Terminal Systems, Inc. announced the receipt of a $5.2-million contract from Hilton Hotels Corp., which calls for a number of ITT's display terminals, controllers, letter printers and SRT modems.

The Kennedy Co. has been awarded a $1.3-million contract from Geophysical Systems Corp. The contract calls for Kennedy's Model 9300 vacuum-column tape transports and Model 9700 tape drives.

New orders for the Sperry Univac System 80 computer include Pure Carbon Co.; Cutting Tools, Inc.; Putnam County, N.Y.; Penn Line Services, Inc.; John West Foods, Ltd. of UK; and Nihon Zoki Pharmaceutical Co. Ltd. of Japan.

Electronic Data Systems Corp. has signed a 15-month contract with Durham Life Insurance Co., N.C., to automate a large part of the firm's administrative functions and claims processing.

Mergers & Acquisitions

Software Management Corp. of Santa Clara, Calif., has been acquired by **Hewlett-Packard Co.** in an exchange of stock.

Cipher Data Products, Inc. has concluded the acquisition of the Memory Products Division of **Perkin-Elmer Corp.** The transaction is estimated to involve $20-million.

Sun Information Services Co. has announced the sale of its Micrographics Division to **NLT Computer Services Corp.** for an undisclosed amount.

Kidde Automated Systems, Inc. has purchased **Computrol**, a data communications company located in Ridgefield, Conn. The terms of the acquisition were not disclosed.

National Data Corp. has completed its acquisition of **Rapidata, Inc.** National Data issued more than one million shares of common stock in connection with the acquisition.

United Technologies Corp.'s Essex Group has recently acquired **Elektro-Finanz AG** of Switzerland for approximately $67 million in cash and notes.

Control Data Corp. has purchased the assets of **Economic Information Systems, Inc.**, N.Y., for an undisclosed amount.

Minicomputer Technology Corp. has been bought by **E-H International, Inc.** for $600,000 in notes that are convertible into shares of E-H common stock.

Applicon, Inc. will be merged into **Schlumberger Technology Corp.**, a wholly owned subsidiary of **Schlumberger Ltd.**

Product Highlight: Dynabyte 5710

Multiuser microcomputers—up to 19MB Winchester/Tape from $8,995*

For performance
Enhanced CP/M-MP/M or OASIS multiuser operating system for the speed of a mini with the ease of a micro—supports up to 8 terminals and 16 printers.

For Winchester/Tape performance, you just can't buy a better multiuser microcomputer than the Dynabyte 5710. Take our 5¼" Winchester disk drive. Either 12MB or 19MB capacity with a removable 17MB Cartridge tape drive.

Packaged in a single, compact, table-top box.

See for yourself
All Dynabytes are backed by Dynabyte's engineering expertise and reputation for high quality. We'd like to tell you more. Call now! **800-538-3939.** In California, 408-263-1221 or write Dynabyte, 521 Cottonwood Dr., Milpitas, California 95035.

DYNABYTE Business Computers

*5710-A2-64K, 12MB Winchester 17MB Cartridge Tape—$8,995 (list)
5710-B2-64K, 19MB Winchester 17MB Cartridge Tape—$10,450 (list)
CP/M; MP/M—trademarks of Digital Research, Inc. OASIS—trademark of Phase One Systems, Inc.

Now a DEC/IBM interconnect that's cost effective

Your DEC computer has more important things to do than be a processor for your IBM communications. Save valuable computing capacity by handling this interconnect workload with COMBOARD™.

To your operators, COMBOARD is a reliable package that doesn't decrease the number of on-liner users.

To your users, COMBOARD is a simple link to IBM systems for job and data transfer.

COMBOARD™

To your management, COMBOARD is a cost-effective solution to a troublesome problem.

COMBOARD models 631, 731 and 1231 support transfer rates from 4,800 to 56K baud. They are the leaders in DEC/IBM and DEC/CDC interconnects.

For more details contact your sales representative at Software Results at 614 421-2094 or mail the coupon today.

SOFTWARE RESULTS CORPORATION

1229 West Third Avenue
Columbus, OH 43212-3090
Telephone: 614-421 2094

Send me more information on COMBOARD™

Name

Company

Address

Telephone

COMBOARD™ Software Results Corporation
DEC, UNIBUS™ Digital Equipment Corporation A228

Contracts & Pacts

Digital Systems Corp. has received a $3.3-million contract modification for the sale of additional computer equipment to the U.S. Navy. This modification increases the total value of equipment to be delivered during the next 18 months to $8.2 million.

Micom Co., a Canadian manufacturer of word processing systems, has placed an order for more than 1,000 8-in. Winchester drives, valued at over $2 million, with Micropolis Corp. Also at Micropolis, a $3-million contract was received from Luxor AB of Sweden, for a number of its Mega-floppy disk drives.

International Data Services, Inc. has completed contract negotiations for a $750,000 sale to Saudi Arabia's Ministry of Minerals and Petroleum. The agreement calls for a Digital Equipment Corp. Vax 11-780 system.

Under the terms of a recent agreement, TRW Datacom International, a division of TRW, Inc., owns exclusive distribution rights to market Convergent Technologies Inc.'s computer products in non-U.S. markets.

Olivetti OPE has made its first move into the retail market with a $1-million contract for its daisywheel printers and sheetfinders in an agreement with CPU Computer Corp. of Charlestown, Mass.

The Greeley Division of Hewlett-Packard Co. and Seagate Technology have signed an OEM purchase agreement for Seagate's ST506 micro-Winchester disk drive.

The U.S. Department of the Treasury's Bureau of Government Financial Operations has ordered eight Honeywell, Inc. Level 66 large-scale computer systems valued at more than $10 million.

The Electronic Devices Division of Rockwell International Corp. has won the primary contract from Matsushita Electric Industrial Co. Ltd. of Japan for the CPU chip in the Panasonic Co. hand-held computer.

Thomson-CSF, a European manufacturer of computer systems and DP equipment, has awarded Pertec Computer Corp.'s Peripheral Division a contract estimated at $12 million.

Century Data Systems, Inc. has signed a $1-million contract to provide Trident removable pack disk drives to P.C. Products Pty., Ltd. of Australia. Century has also received a similar order from Centennial Computer Products of Rockville, Md., valued at $300,000.

M/A-Com Digital Communications Corp., Inc. has received a contract in the amount of $5,500,000 from GTE Telenet, Vienna, Va., calling for additional data concentration equipment to be integrated into GTE Telenet's packet-switching network.

Computer Sciences Corp. (CSC) has won a U.S. Department of Labor contract for computer systems support services to the Employment Standards Administration. The contract is valued at $1.1 million for the first year and at $3.5 million over a three-year period, if renewed. In addition, CSC was awarded two U.S. Navy contracts with a potential total in excess of $9 million.

Expansions

SSM Microcomputer Products, Inc. has completed the expansion of its San Jose, Calif., office nearly doubling the plant's manufacturing and warehousing capabilities. The street address of the new facility is 2190 Paragon Drive, San Jose, Calif. 95131.

Gould, Inc.'s DeAnza Imaging and Graphics Division has opened its new headquarters at 1870 Lundy Ave., San Jose, Calif. 95131.

In its third move in the past year, **Stoneware, Inc.** has contracted to increase its office and plant facility space by 50%. Stoneware is headquartered in the San Rafael, Calif., business park complex.

Media Systems Technology, Inc. has expanded its operations in a move to a new 12,000 sq-ft facility at 17991 Fitch Ave., Irvine, Calif. 92714.

Peritek Corp. has moved to new facilities at 5550 Redwood Road in Oakland, Calif. 94619.

Emulog, Inc. has moved to larger headqarters at 48881 Kato Road, Freemont, Calif. 94538.

Symbolics Financial Systems, Inc. has relocated to 1740 N. Collins Blvd., Richardson, Texas 75081.

ALS, Inc. has moved to larger corporate facilities located at 1195 E. Arques Ave., Sunnyvale, Calif. 94086.

Perkin-Elmer Corp. has opened sales and service offices at 60 Broad St., New York, N.Y. 10004.

ROPES™

ON-LINE PRINTING UNDER CICS

FEATURES:

- Device-independent application programming
- Flexible report routing and control
- Full user-management of printer network
- On-line and batch report generation
- Special forms processing
- Command and Macro level support
- Extensive user documentation
- Complete recovery from CICS and printer outages
- JES and POWER retrieval also available

Axios Products, Inc.
2364 Middle Country Road
Centereach, NY 11720

CALL NOW FOR FREE TRIAL 516-588-5461

PDP-11 & VAX users...

ComDesign's TC-3 Concentrates Multiple Terminals and Printers on a Single Telephone Line Cost-Effectively for the PDP-11 and VAX.

- CONCENTRATION — Many terminals–one line
- COST SAVINGS TO 40% — Totally eliminates DZIIs and cables
- PROVEN RELIABILITY — TC-3s are in use world-wide
- ERROR CORRECTION — Data checked with all errors eliminated automatically
- STATISTICAL MULTIPLEXING — Efficiencies to 400%
- FAST ECHO RESPONSE —at last !
- BUILT-IN SYSTEM MONITORS — Real-time data and signal displays
- POWERFUL DIAGNOSTIC PANEL — Modem loop-back, unit self-tests, and terminal diagnostics

Put a TC-3 on Your UNIBUS* and Get a DZ11 with Stat Muxing too!

For further information and the sales office for your area Call toll-free (800) 235-6938 or in Calif. (805) 964-9852

ComDesign

ComDesign, Inc.
751 South Kellogg Avenue
Goleta, California 93117

*Registered Trademarks of DEC

With PACS™, everyone will love your VAX!®

As we all know, DEC's® VAX-11 is a system of remarkable performance capabilities . . . a joy to engineers and scientists. But, wonderful as they are, the people at DEC don't provide VAX users with a comprehensive resource monitoring software package. And, there are people in your company who like to keep track of things.

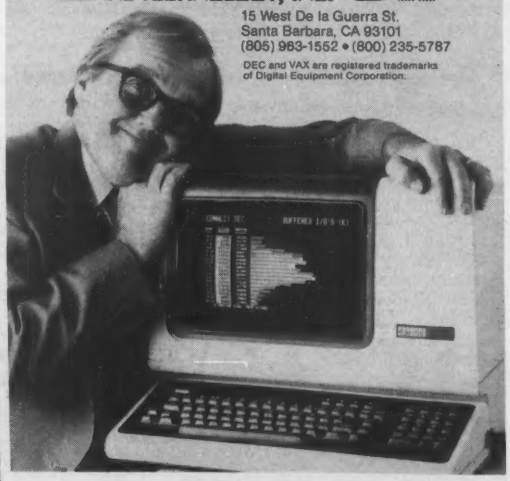
So, we developed PACS (Process Accounting and Chargeback System) to monitor your VAX system. PACS summarizes the use of computer resources on a per user, per project and per facility basis, and charges back resource usage to system users.

PACS makes your VAX not only the most advanced system of its kind, but one that can be tracked, monitored and properly accounted for . . . a system loved not only by the technical people, but by the people who take care of the technical people (and often sign their paychecks). We'll be happy to demonstrate PACS by telephone on your terminal today. Or, write for complete documentation.

SIGNAL TECHNOLOGY, INC. ST

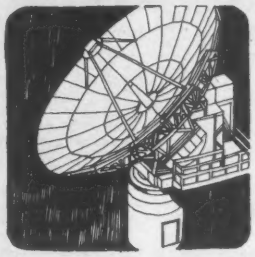
15 West De la Guerra St.
Santa Barbara, CA 93101
(805) 963-1552 • (800) 235-5787

DEC and VAX are registered trademarks of Digital Equipment Corporation.



POSITION ANNOUNCEMENTS

Software Engineers



TECHNICAL CHALLENGE YOU CAN COUNT ON!

If you are a software engineer who enjoys and can meet technical challenges, we need you. A wide variety of assignments from entry to senior level at our Palo Alto, California facility, involving space flight systems, communications and space information systems, offer dual challenges: the opportunity to make significant contributions to major programs, plus the opportunity to increase your software engineering expertise through Case Study Training.

You'll be working with more than 200 software tools, such as full screen text editors, compilers and very advanced structured design support systems. Assignments at various skill levels include translating user requirements into a system concept employing the effective use of hardware and software, translating software requirements into structured software design, and providing detailed design, development and programming of real-time software.

Along with a technical degree, your background should include top-down design, structured programming and/or design analysis. Experience in PDP 11/70 and real-time communications processing would be a plus. All openings require U.S. citizenship and a current security clearance would be helpful. Accepted candidates may be required to undergo a background investigation.

In addition to challenge, we offer an excellent salary, comprehensive benefits and the potential for positive professional advancement. For confidential consideration, applicants may send a resume to John Tehan, Ford Aerospace & Communications Corporation, Dept. JT-75, 3939 Fabian Way, Palo Alto, California 94303, or call him at (415) 494-1793.

IT'S WAITING FOR YOU HERE...

Ford

Ford Aerospace & Communications Corp.

Western Development Laboratories Division

An Equal Opportunity Employer

COUNT ON US!

Arizona/California/Texas/Colorado/Florida

SCIENTIFIC OR BUSINESS PROGRAMMERS

All fees and relocation paid. $18-35,000.

If you have a BSEE, BSCS, BS in Mathematics or Physics or equivalent, we need you right now.

For Business: OS/DOS/IMS/CICS/MVS/JES Prog/Anal/Systems/Data Base. All large scale installations.

For Scientific: experience in the computer, communications, semiconductor, or aerospace/defense industries.

Your name, resume, and present employer will not be given out without your permission.

For sincere personal service, please send a confidential resume to:

Dan Pullman (602) 274-5660

PULLMAN PERSONNEL

3033 North Central Ave. Suite 401, Phoenix, Arizona 85012

SYSTEMS PROGRAMMERS & ANALYSTS

$20,000-$35,000

Immediate openings in beautiful Northern California. For details call or send resume in strict confidence to Cy Massar, V.P. Data Processing.

SunValley Personnel Agency

2233 Watt Avenue
Sacramento, CA 95825
(916) 488-8020

JOIN THE HEALTH CARE TEAM

ANALYST PROGRAMMER

Candidate must have 2 to 3 yrs. programming experience to include BAL, PL/1 and CICS. COBOL is desirable. An opportunity to enhance a clinical laboratory application. Includes development potential in the area of systems programming. Call Joan Kimmel at (414) 257-5483 or send your resume including salary history to J.N. Davidson.

MEDICAL COLLEGE OF WISCONSIN
Department of Pathology
8700 W. Wisconsin Ave.
Milwaukee, WI 53226

Equal Opportunity.
Affirmative Action Employer M/F/H

EDP OPPORTUNITIES *COAST TO COAST*

Robert Half, staffed by EDP professionals for EDP professionals with 70 offices throughout the U.S., Canada & Great Britain, is the largest network of personnel consultants in the Data Processing field. And its establishment in 1948 also makes Robert Half the oldest. One call and you can search the local, national and international markets. All fees are paid by client companies, of course. The following is a partial listing of opportunities and locations:

SAN FRANCISCO

SR ANALYST PROG

Consultant (Big 8) wanted to direct a major project. IBM System 34, RPG II pref'd. Salary to **$45,000**

PROG ANALYST

COBOL/Mini, prog/analyst wanted to implement actg systems. DIGITAL shop. Salary to **$35,000**

EDP AUDIT

Our clients will train Sr P/A's with big system IBM exper. Some data base pref'd. Salaries to $31,000 with no audit exper.

COMPILER/LANGUAGE DESIGNER

Prior language/data base dvlpmt at byte lever req'd. Will use IBM architecture. Salary to **$100,000**

SYSTEMS PROGRAMMERS

Both jr & sr for IBM 303x, MVS, VS, VM shops. Proj mgm't for senior. Salary to **$40,000**

Jerry Anderson
Bob Couch
ROBERT HALF
of Northern California, Inc.
111 Pine St., #1500
San Francisco, CA 94111
(415) 434-1900

PALO ALTO SAN JOSE

DATABASE ANALYST

Multiple opportunities in manufacturing and financial environments. IBM MVS, IMS DB/DC. 3+ years experience. To **$45,000**

SYSTEMS ANALYST

Large financial institution has multiple openings for individuals with IBM OS, IMS DB/DC or CICS experience. To **$40,000**

SR SYSTEMS ANALYST

Silicon Valley manufacturing co seeks Analyst with analysis/design-thru-implementation experience. To **$35,000**

SYSTEMS PROGRAMMER

Major computer manufacturer needs MVS, VM, IMS systems expertise. Telecommunications a plus. To **$45,000**

ROBERT HALF
of Northern Calif., Inc.
2 Palo Alto Sq., Ste. 212
Palo Alto, CA 94304
(415) 493-8700

675 No. First St., Ste. 6 19
San Jose, CA 95112
(408) 293-9040

MILWAUKEE

SYSTEMS ANALYST

Major manufacturing company seeks strong systems work experience. Use your good communication skills and ability to relate to business people beyond DP to secure this position. Company has an IBM 4341 DOS/VSE, CICS/VSE, DL1 environment. **$25-30,000**

PROJECT MANAGER

Huge organization desires high-level project manager to coordinate development of applications on large teleprocessing network. Individual selected will represent large user organization to DP. Coordinate with specialists in areas of network control, software support & application development. Supervise technical staff of 4. **$35-45,000**

ROBERT HALF
of Wisconsin, Inc.
777 E. Wisconsin Avenue
Milwaukee, WI 53202
(414) 271-HALF (271-4253)

Specializing in E.D.P. positions (not just jobs).

DAYTON

COMPUTER OPERATIONS ANALYST

If you have DP bkgrd which includes SAS, COBOL, QUIKJOB, TSO and/or CICS, IMS and exp as operations analyst or operator & systems analyst — This oppty is for you. **$25-28,000**

CREATIVE COBOL PROG/ANALYST

Looking for an oppty to use your 3+ yrs exp in a creative environment? "People Oriented" IBM 3031 OS/VSI shop seeks unique indiv with finl & business applications bkgrd. IMS & CICS a +! **$19-22,000**

SYSTEMS PROGRAMMER

Exceptional oppty for the technically oriented DP professional! Progressive company seeks indiv exp'd with DOS/VSE, CICS, Power, ICCF, VOLLIE, ALC, Data Base, COBOL, BTAM, VSAM. Previous sys gen exp a +. Company provides tech support locally, 25% travel — company plane. Excel benefits. **$22-25,000**

Susan Robinson
ROBERT HALF
of Dayton, Inc.
First National Plaza
Dayton, OH 45402
(513) 224-0600

CHICAGO

LEAD SYSTEMS PROGRAMMER

Fortune 500 company has need for person who will be responsible for MVS Internals, CICS Internals and who is knowledgeable in ACF-VTAM. Position offers high visibility and excellent management potential. **$38,000**

George Thomas
Sandy White
ROBERT HALF
of Chicago, Inc.
35 E. Wacker
Chicago, IL 60601
(312) 782-6930

SEATTLE

PROG/ANALYST

Several current openings in banking, insurance, manufacturing and healthcare firms in Alaska, Montana, Washington and Oregon. Require 2+ years medium to large scale IBM COBOL business applications or Assembler systems software experience. Salaries $27,000-$38,000 plus relocation allowance for Alaska.

Ray Magill
ROBERT HALF
of Seattle, Inc.
600 University St.
Suite #2328
Seattle, WA 98101
(206) 624-9000

NEW ORLEANS

SYSTEM ANALYST

Must 370 or 4300 with good user interface. To **$32,000**

PROGRAMMER

RPG on Sys 34 with two yrs bus appl experience. From **$23,000**

SYSTEM PROGRAMMER

Must have CICS COBOL DOS/VSE on a 4341. To **$30,000**

DP MANAGER

Currently B-80 shop looking for Sys 34 needs strong sys analysis with bus appls. From **$25,000** up

PROJECT MANAGER

Large progressive bank is seeking individual with heavy banking appls bkgrd. Tymshare banking sys exp warrants a call. To **$38,000**

ROBERT HALF
of Louisiana, Inc.
4630 One Shell Square
New Orleans, LA 70139
(504) 524-3773

ALBUQUERQUE

SOFTWARE SPECIALIST

Blue chip co offers career position and growth oppty. Requires 2 to 4 years exp with MVS operating system. Start **$28,000**

CICS

Expanding IBM 370 shop. Requires CICS exp either OS or DOS. Professional environment. Start **$28-30,000**

Dick Starnes
ROBERT HALF
of New Mexico
P.O. Box 3320
Albuquerque, NM 87190
(505) 884-4557

DENVER

MANAGER

Large Denver transportation company seeks a mgmt type person with solid BURROUGHS 1855 & 1860 on-line systems. Any structured COBOL programming exp helpful. Ideal opportunity for the data processing professional seeking a challenge. Start **$38,000** range

SYSTEMS PROGRAMMER

Major Colorado Springs energy firm seeks person for a growth position. Person will work with VTAM, NCP & MVS. Any JESSII a plus. Ideal opportunity to join a company with a strong commitment to data processing development. Start **$35,000** range Salary to **$35,000**

ROBERT HALF
of Denver, Inc.
2 Park Central Suite 747
1515 Arapahoe St.
Denver, CO 80202
(303) 629-1010

DALLAS

PROGRAMMER ANALYST

Timely established and profitable company is establishing a new data center. Looking for two yrs IBM DOS COBOL programming skills. CICS desired. To **$27,100**

SYSTEMS PROGRAMMER

This company provides excellent security and career opportunities. Looking for an individual with a teleprocessing background including CICS internals. To **$35,000**

John Staiger
ROBERT HALF
of Dallas, Inc.
2 NorthPark East, Suite 750
Dallas, TX 75240
(214) 363-3300

NEW YORK

CICS COBOL

Outstanding developmental position with high visibility in this medium-sized company specializing in the financial industry. 3+ years command LEVEL CICS experience required. This dual 433/DOS installation offers excellent growth with managerial potential. **$40,000**

COBOL & BASIC

Meaningful growth potential in newly installed DEC 20 installation. 3+ years COBOL, DEC, business applications, systems design, and some BASIC programming experience. The environment consists of DEC 11/70, 11/44 and 2 DEC 20s. Development of business applications using COBOL on DEC 20s. Unique opportunity. **$32,000**

RPG II
DUAL 4331
TRAIN COBOL

Leading financial company seeks programmer/analyst with 3+ years experience. Responsibilities include systems analysis and the development of a major commodity trading system. Company will train in COBOL immediately. Excellent benefits and growth potential. **$30,000**

DP MANAGER

One of the finest law firms in the country is seeking a real DP pro with 8+ years experience. Unparalleled situation exists for shirt-sleeve type who has strong managerial background and good working knowledge of DEC hardware. DIBOL programming a plus! Key responsibilities will be to plan and direct the growth of this relatively new computer center, develop new application systems and continue to integrate the computer into the firm. Manager will initially supervise staff of 8. High visibility and a growth minded management team make this a superior opportunity. **$45,000**

DATA BASE ADMINISTRATOR

Outstanding developmental position available with a division of internationally recognized company. The ideal candidate should possess 2 years of Data Base design experience utilizing either DMS or DL-1. This state-of-the-art environment offers excellent growth potential and a very liberal benefits package, including 3 weeks vacation and BONUS. **$36,000**

ROBERT HALF
of New York, Inc.
522 Fifth Avenue
New York, NY 10036
(212) 221-6500

AUSTIN

SYSTEM OPERATOR

1 yr + exp on System 34. General business systems. RPGII required. **$14,000**

SYSTEMS ANALYST

Requires 3 to 4 yrs in systems application and development. Procedures manual skills important. COBAL required. **$26,000**

Tina Romans
ROBERT HALF
of Austin, Inc.
Champion Tower
400 East Anderson Lane
Suite #334
Austin, TX 78752
(512) 835-0883

LOUISVILLE

CICS PROGRAMMERS

Large corporation in the oil industry seeks CICS Programmer with manufacturing or BAL. Excellent relocation package. Call for immediate interviews. Salary to **$34,000**

SYSTEMS 38

DP manager and programmers, many openings exist in the Southeast and South. Conversions from 32 or 34 to 38 is a definite plus. Programmers salary to **$26,000** Managers salary to **$35,000**

OPERATIONS MANAGER

Well-groomed operations manager is needed with five to ten years experience managing over 70 people. IBM OS/MVS equipment is installed. Excellent relocation and benefits. Salary to **$35,000**

Tom Williams
ROBERT HALF
of Louisville, Inc.
680 South Fourth St.
Louisville, KY 40202
(502) 585-1751

HOUSTON

DATA BASE ANALYST

Will do IMS data base planning, develop standards initiate documentation, procedures and train. Will interface with development, tech support and operations. Salary to **$40,000**

ADMINISTRATIVE MGR

Will manage administrative areas including word processing, systems development methodology reporting, monthly mgmt status reporting. Will participate in executive mgmt planning. Banking background in Data Processing a big plus. Salary to mid **$40's**

MSA

Exp with either MSA G/L or Payroll plus IBM OS COBOL, 2+ yrs in programming and/or analysis. Salary to **$28,000**

SYSTEMS ANALYST

Large energy Co has opening in their business development area. Candidate should have 3+ yrs with major corporate projects and some supervisory responsibility. Large IBM OS equip and minimum of 3.0 GPA. Salary to mid **$30's**

CICS SYSTEMS PROGRAMMER

Like lots of responsibility? You can be the Guru in this small but dynamic shop. Good structured environment. CICS sys gen exp required. Salary to low **$30's**

IBM 30XX

Company has tuition refund plan plus mgmt training, in-house technical training plus off-site training when required. Many other company benefits including free parking, paid O/T, dental, subsidized cafeteria, etc. Need Programmer Analyst with OS COBOL design and implementation. Salary to upper **$20's**

Plus other more technical positions.

Interview, relocation and Fee all paid by Client Companies.

Jim Fleming
ROBERT HALF
of Houston, Inc.
720 North Post Oak Rd. #228
Houston, TX 77024
(713) 688-1800

ROBERT HALF

JACKSONVILLE

PROGRAMMER/ANALYST

Major Jacksonville corporation is seeking a highly motivated individual for their DP staff. Qualified candidates will have a degree with 3+ yrs programming using COBOL and PL1. In addition, a strong background in CICS, IMS and MSA packages is required. Relocation and fee paid by management.
Salary **$25-30,000**

Doug Cook
ROBERT HALF
of Jacksonville, Inc.
9550 Regency Square Blvd.
Suite 213
Jacksonville, FL 32211
(904) 721-0970

TAMPA

MGR

Sys 38-shirt sleeves type. Be part of mgmt team-congl. Country living. To **$30,000**

SYS PROG

Multiple openings for exp with MVS-Sysgens. Top notch co's-Need you now.
To **$40,000**

MGR

Here's the one you want. Why wait? Super co needs leader systems mgr-prog bkgd. Prof org-High visibility. **$33,000**

Stan Allen
ROBERT HALF
of Tampa, Inc.
1311 North Westshore Blvd.
Tampa, FL 33607
(813) 876-4191

SAN ANTONIO

PROGRAMMER

Degree preferred, RPG II or COBOL skills, any hardware acceptable. Position to be filled is one of visibility and growth, both in earnings and responsibility. Must have 2 plus yrs actual work experience.
$15-20,000

SR PROG ANALYST

Degree or experience. 8 plus yrs in DP with last 3 yrs in Analyst capability. IBM shop, COBOL, CICS, Datapoint front-end; need good analyst skills and overall view of department growth. Position has management potential and company will be in new facilities within 18 months. **$24-28,000**

PROGRAMMER ANALYST

Degree or experience. Solid business application a MUST. 3+ yrs COBOL and Univac hardware is ideal for company. Upward growth is obtainable through hard work. **$17-25,000**

MGR OF INTERNAL CONTROLS

Degree a MUST. Overall 10 yrs of DP with documentation, scheduling, hardware/software evaluating, IBM shop, COBOL, CICS, Networking, etc exposure will fill this expanding company's slot. This position is the ass't to DP Director. Excellent benefits & growth.
$28-34,000

All positions above and many more are in Texas, where "Long Necks", "Armadillos" and the "Cotton Eyed Joe" call home.

Bob Baldaut
ROBERT HALF
of San Antonio, Inc.
First International Bank Tower
Suite #850
San Antonio, TX 78201
1-800-531-5402
In Texas Dial (512) 736-2467

SOUTHERN CALIFORNIA

LOS ANGELES

SYSTEMS PROGRAMMERS

Bring your 2-5 yrs of experience to sunny LA and let your career outlook shine!

MVS $40,000+ +
VSE $40,000+
VM $40,000
VS/1 $40,000

Client companies pay all fees.

Joe Raeta
ROBERT HALF
of Los Angeles
3600 Wilshire, Suite #2000
Los Angeles, CA 90010
(213) 386-6805

ORANGE COUNTY

EDP AUDIT DIRECTOR

Let's trade! You bring us 10 yrs of large scale DP and Audit experience and we'll give you what may be the opportunity of a lifetime.
To **$50,000** plus bonus

Client companies pay all fees.

Al Handler
ROBERT HALF
of Orange County
2333 N. Broadway, #200
Santa Ana, CA 92706
(714) 835-4103

COMMERCE

PROG/ANALYST

Our client, a distributor with international appeal, seeks exposure in BAL programming. Fin'l/operational applications. IBM 4331 DOS. **$20-35,000**

Client companies pay all fees.

Bob Dack
ROBERT HALF
of Los Angeles
6252 E. Telegraph
Commerce, CA 90040
(213) 721-2197

KANSAS CITY

Kansas City based Fortune 500 company is in need of several data processing professionals. These include: MIS Director, $40,000+; Programmer Analysts (COBOL), to $35,000; Fortran Programmers, to $30,000. Financial and scientific applications installed and being developed.

Jill Minkoff
ROBERT HALF
of Kansas City
127 W. 10th St.
Kansas City, MO 64105
(816) 474-4583

GREENSBORO

PROG/ANALYST

3+ yrs exp in mfg-IMS appl. Knowledge of OS, COBOL, PL1 a +. Multi openings. To **$32,000**

PROG/ANALYST

Local div of Fortune 100 co. COBOL reqd. Exp with MVS, IMS CICS, TSO a plus.
To **$24,000**

SECURITY SUPERVISOR

Ground floor oppty with new data center-4341, MVS, CICS. 2 yrs supr a must. To **$28,000**

Larry Brooks
ROBERT HALF
of North Carolina, Inc.
Wachovia Bldg., Suite 1117
Greensboro, NC 27401
(919) 274-2448

BOSTON

MGR H/S PLANNING & EVAL

Dynamic hi-tech vendor seeks MIS pro for new corp mgmt role. Respon for hardware/software eval & selection, vendor negotiation, mainframe & mini config planning. Hi-level visibility for the tech strong exec. **$42,000**

MGR DECISION SUPPORT

Aggressive self starter needed to develop MIS functions for Fortune 200 internat firm. Will work with upper mgmt on projs incl graphics, modeling, strategic planning, office autom & communications. Corp-wide visibility. **$40,000**

BANKING PROJECT MGR

Prominent comm'l bank seeks top-notch mgr to direct 15+ P/A's. IBM OS/MVS + minis environ. Oppty to use proj mgmt skills in a fast-paced growing org. **$40,000**

COBOL CONSULTANT

Prestigious & growing consulting firm seeks polished indiv for proj leader role. Will manage 2-3 P/A's for fin'l projs in COBOL & CICS environ. Must possess excellent business bearing. **$33,000**

IMS SUPPORT ANALYST

Large svcs firm seeks tech strong IMS analyst for new effort. IBM 3033 OS/MVS, IMS-DBDC environ. Will assist apps group in large-scale design & devel. Excellent benefit pkg
$35,000

Gerry Battista
ROBERT HALF
of Boston, Inc.
100 Summer Street
Boston, MA 02110
(617) 423-1200

Specializing in E.D.P. positions (not just jobs).

PROVIDENCE

DATA BASE SPECIALIST

Fortune 500 co desires in-depth IMS DB/DC expertise from the mfg ind. Provide tech support to proj & group leadership role in implementation of batch & on-line DB apps. **$35,000**

OPERATIONS MANAGER

Prominent local mfr searching for systems pro to manage lge data center. Extensive on-line network. Supv 30 in 7 day/3 shift, IBM 4341 & 370 environ. $1.7M budget. **$35,000**

CIF PROJECT LEADER

Maj fin'l inst seeks exp'd proj leader to supv sm group (3-5) of on-line progs in devel of corp CIF. Hvy bkgrd in CICS, DL-1, MVS environ desirable. **$30,000**

MFG PROG/ANALYST

Rural Mass mfr has immed need for sr prog/analyst to implement distrib processing sys. Order entry, invty control apps knowl desired. IBM 4341 DOS environ. COBOL req. CICS & DL-1 a plus. **$30,000**

MRP PROG/ANALYST

Electronics mfr desires RPG II prog to devel & implement cost acctg & material control sys. Direct programmers & train users. Work with all lvls of mgmt. IBM Sys 3 environ.
$28,000

Bob Lathrop
ROBERT HALF
of Providence, Inc.
400 Turks Head Blvd.
Providence, RI 02903
(401) 279-8700

HARTFORD

CAD/CAM

CT oppty with multi-div mfr for software eng'r to devel new product specs. Min 2 yrs qualifies for starting salary to **$35,000**

BUSINESS SYSTEMS

CT consumer goods corp seeking indivi with data base exposure to devel new mkgt oriented bus planning sys.
Salary to **$36,000**

SYSTEMS DEVEL

CICS bkgrd in gen bus apps qualifies for sr level info-systems position. COBOL bkgrd req. Indiv will grow in respons & salary based on own potential! **$33,000**

OFFICE AUTOMATION

Will manage devel of "office of the future" in word processing, electronic mail & teleconferencing for multi nat corp. Oppty for extensive trvl in dynamic & challenging environ. **$33,000**

SR INTERNAL CONSULTANT

Significant staff pos with CT corp for prof technical indiv with solid bkgrd in sys devel & hardware/software planning to implem corp state-of-the-art technologies. **$40,000**

SR PROJECT ANALYST

Join talented devel team on implem of nat ins automation projs in growth oriented environ. Min 3 yrs exp in COBOL req. CICS & IMS a plus. Hftd area location. **$34,000**

Stan Durbas
Carol Wilson
ROBERT HALF
of Hartford, Inc.
111 Pearl Street
Hartford, CT 06103
(203) 278-7170

MIAMI

E D P CONSULTANT

Prestige, international travel and career growth associated with this opening in Miami branch of major CPA firm. This enticing position requires a degree, a professional image, and prior large-scale IBM programming background involving heavy user interface. Previous national CPA firm consulting experience helpful. Secure position with great benefits. Relocation and all fees paid. Salary to **$28,000**

Bonnie Gouz
ROBERT HALF
of Miami, Inc.
2655 Le Jeune Rd.
Suite 814
Miami, FL 33134
(305) 447-1757

BUFFALO

PROJECT MANAGER

Div of multi plant industrial mfr loc So of Buffalo. Expansion pos req analyst looking to move into proj leadership. Bkgrd should incl COBOL prog & mfg sys design & implementation. Sophisticated lge IBM mainframe install. Tech exposure to CICS a plus. **$30,000**

SYSTEMS PROG

Major conversion to IBM state-of-the-art. Ideal bkgrd is- apps prog with min 2 yrs software prog exp & one or more of the following: IMS, CICS networking + OS MVS sys generation. Profitable div of mfg co loc in capital region of NY State. Career pos. **$34,000**

APPLICATIONS MGR

Cent NY loc. Total admin resp for staff of 15 progs & bus analysts. Bkgrd must shop strong apps development. Mfg co environ best. IBM 370/3033 CICS, IMS shop. **$35,000**

PROJECT LEADER

New facility, building staff, needs strong analyst to start up software sys area. Min 3 yrs BAL & COBOL with proven ability to perform network mgmt. IBM 4341 DOS/VSE.
$35,000

ASST DP MGR

Highly tech bkgrd + min 2 yrs supvry exp qualifies for the #2 spot. IBM on-line DOS/VSE are musts to back up D P mgr. Resp for daily admin functions; design & implementation & user/vendor relationships. Mfg sys not nec. **$28,000**

Pam Siegal
Bob Collins
ROBERT HALF
of Buffalo, Inc.
1310 Liberty Bank Bldg.
Buffalo, NY 14202
(716) 842-0801

ORLANDO

PROGRAMMERS

New co. Excellent growth. Must 1 yr COBOL & MVS-any S&L exp a plus. To **$25,000**

PROGRAMMER

2 yrs OS, BAL, & Fortran is required for leading S E utility.
$25,000

SYS PROG

2 yrs MVS, DDP, D C. Pref Eval & capacity planning. Super growth. To **$30,000**

Pam Evans
ROBERT HALF
of Orlando, Inc.
2699 Lee Road, Suite 415
P.O. Box 17892
Orlando, FL 32860
(305) 628-2836

WASHINGTON

SYSTEM PROGRAMMER

Respected State-of-the-Art VA software designer expending staff seeks topflight software designer who can work with team. Must be fluent in MVS & IMS or CICS INTERNALS. Demanding environment. Salary plus great benefits. **$55,000**

ROBERT HALF
of Washington, Inc.
7316 Wisconsin Avenue
Washington, DC 20014
(301) 652-1960

ST. LOUIS

LEAD SYSTEMS ANALYST

A leader in its field and recent convert to IBM's MVS seeks an individual capable of filling this high visibility position. Must have MBA and undergrad 3.0/4.0 GPA. Five to ten years experience. Also must have converted Bill of Materials system. Experience with on-line inventory systems is a definite plus.
Salary to **$35,000**

SR PROGRAMMER/ANALYST

Fortune 500 manufacturing company seeks a senior level COBOL programmer/analyst with CICS experience. Background must be from large IBM OS shop. Experience with project management is a definite plus. This is a stepping stone to DP mgmt. Salary to **$29,000**

PROJECT MANAGER

Major foods manufacturing firm expanding their DP dept needs prior programmer or systems analyst to head up financial area. IBM 4341 OS/MVS, CICS, Data Base exp and degree necessary. To **$33,000**

SYSTEMS ANALYST

Prominent insurance co seeks analysis and design pro with IBM 370/OS/MVS, IMS DB/DC expertise. No coding required. Excellent fringes and advancement potential. To **$30,000**

MARKETING REPRESENTATIVE

Health services division of leading establishment of its kind seeks individual with proven marketing ability to sell its DP services to hospitals and health care facilities nationwide. Exciting opportunity.
To **$40,000**

Dolores Cook
Randy Pace
ROBERT HALF
of St. Louis, Inc.
7733 Forsyth Blvd.
St. Louis, MO 63105
(314) 727-1535

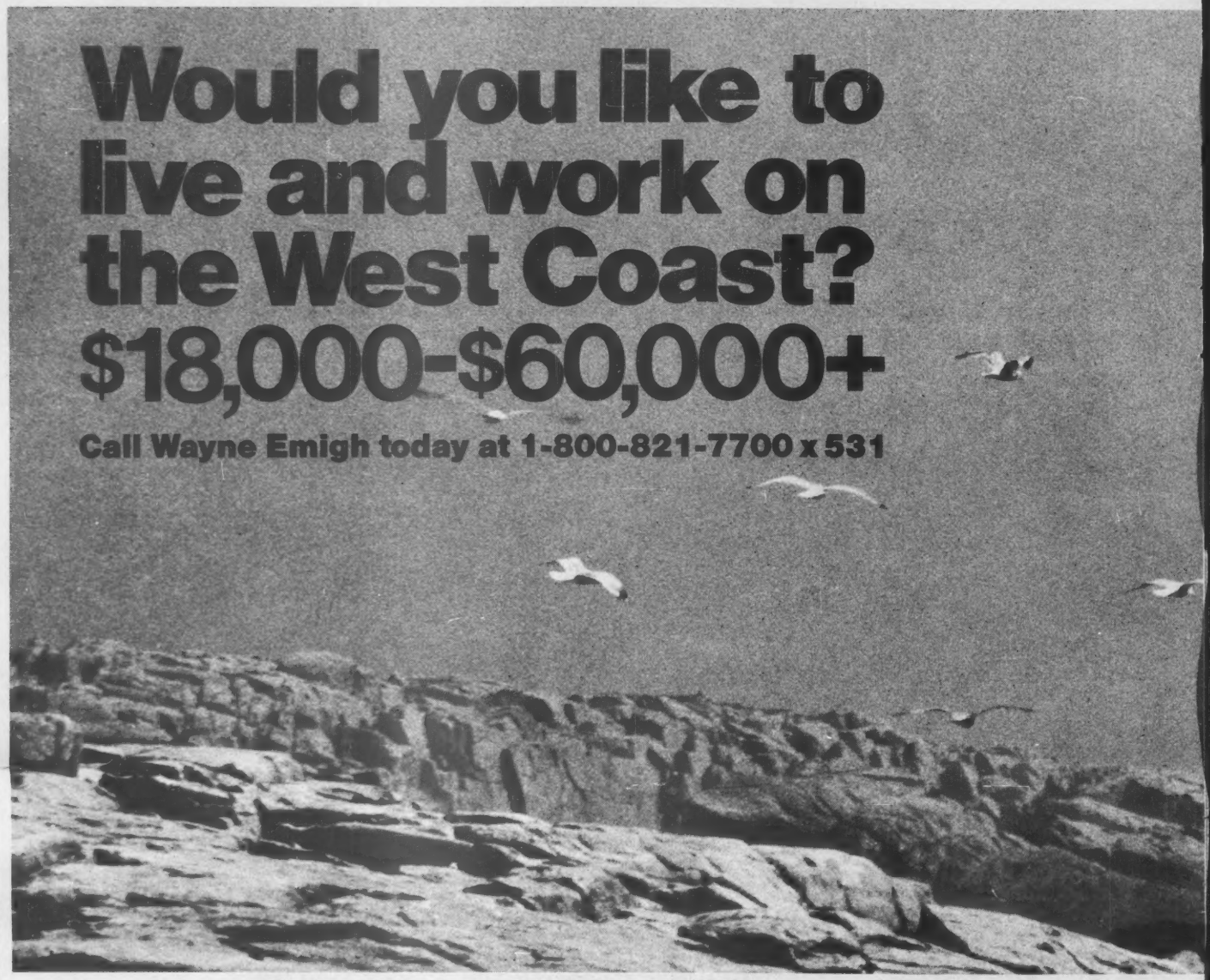
FREE:

Ask for our latest Salary Survey.

Would you like to live and work on the West Coast?

$18,000-$60,000+

Call Wayne Emigh today at 1-800-821-7700 x 531



Call today, tonight or this weekend. Our toll free

Washington

Information Systems Expansion. Eastern Washington based manufacturer in the process of expanding its corporate data center seeks professionals in a variety of disciplines including Scientific Programmer, Analysts, Minicomputer Programmer Analysts and Business Systems Analysts. State-of-the-art environment includes real-time and interactive computing. To $28,000.

Programmer Analyst—Management Training. Rapidly expanding Seattle suburban data processing organization seeks a professional having at least two years of IBM OS COBOL experience to work on a variety of accounting and financial information systems. Continued expansion provides excellent opportunities for upward mobility. To $25,000.

Senior Commercial Analysts—Consulting. Leading nationwide data processing services firm seeks professionals with distribution, manufacturing or government applications experience and exposure in a large-scale IBM or minicomputer environment. Rapid expansion provides excellent management promotion opportunities. To $26,800.

Systems Programmer—Gain Sophistication. Diversified Fortune 500 organization headquartered in a Seattle suburb offers state-of-the-art exposure to an experienced IBM OS Systems Programmer. MVS/JES sysgens, internals desirable. To $30,000.

Systems and Programming Manager—Financial. Highly profitable Seattle suburban organization has outgrown its present system and seeks a proven Manager capable of planning for expansion. Experience in IBM OS preferred. To $50,000.

Sales Representative—New Position. Rapidly growing Seattle suburban branch office of a nationwide computer services organization seeks experienced sales professional. Requires executive level selling ability. Outstanding new territory opportunity. Expected first-year earnings $60,000.

Scientific Analyst—Graphics. Highly regarded Pacific Northwest organization has created a new position to provide liaison between the computing and engineering groups. Heavy graphics experience required. Advanced degree preferred. To $30,000.

Systems Analysts—New Data Base Development. Expanding Eastern Washington organization seeks professionals with manufacturing or financial applications background to assist in an on-line data base. Prior experience in telecommunications and distributed processing preferred. To $35,000.

Programmer Analyst—Manufacturing Systems. Pacific Northwest organization which is a leading firm in the energy systems area offers the opportunity to work with large-scale financial, accounting and materials systems. Expertise with COBOL in a large-scale environment preferred. To $30,000.

Mini Programmer Analysts—Marketing Support. Seattle OEM firm has openings for individuals who enjoy customer interface roles and have one to two years of experience with HP3000 COBOL. Some travel and an informal work environment provided. To $24,000.

Consultant. Seattle office of a Big 8 CPA firm seeks a professional capable of directing its systems consulting activities. Exposure to a broad variety of commercial applications desired. To $35,000.

Oregon

Senior Analyst—Project Manager. Dynamic Oregon based firm seeks a key individual to assume responsibility for major projects in manufacturing, marketing and distribution applications areas from conceptualization through implementation. Organization growth will provide additional management opportunity. To $30,000.

Marketing Representative—Hardware and Software. Portland branch of a rapidly growing firm offers a unique opportunity to expand an Oregon territory. Knowledge of general business applications and proven sales background required. Excellent training and technical support provided. First year earnings potential $40,000.

Systems Analyst—New Data Center. Ground floor opportunity exists within a well-funded subsidiary of a major Portland energy firm which is virtually recession-proof. Three years of experience in general business applications, large-scale IBM and data base preferred. To $30,000.

Programmer Analysts—New Systems. Continued growth of Fortune 500 company headquartered in Portland has created new openings for Programmer Analysts in manufacturing, financial and human resource applications areas. Requires minimum of two years OS COBOL and good interface skills. Provides good growth potential. To $28,000.

Network Analyst—Telecommunications. Diversified Portland organization seeks a professional to join a new group in state-of-the-art environment supporting a large terminal network. Requires at least one year of OS/VS1 or MVS internals and good knowledge of evaluation tools. To $30,000.

Senior Programmer Analyst—New On-Line System. Initially, will be assigned to an application development and implementation project using CICS. Excellent opportunity to function as Lead Programmer Analyst, to use your interface skills with both the user and software vendor, and to gain broad exposure to company operations. To $26,000.

New Data Center—State-of-the-Art Hardware and Software. The establishment of a large IBM based data center within a Portland based manufacturing firm has created opportunities for Telecommunications Systems Programmers (to $35,000), MVS Systems Programmers (to $35,000), Network Analysts (to $32,000), Performance Specialist (to $37,000), Programmer Analysts (to $28,000), and more.

Software Engineer—Systems Designer. Will work on the design and development of new hardware and software for interfaces to new computer systems using high speed circuits, multiprogramming and multiprocessing techniques. Excellent growth potential exists with this rapidly expanding manufacturer of computer supported products. To $37,000.

Consultant—Big 8 Firm. National consulting firm seeks a broadly-based individual to provide consulting services to a wide variety of clients including both private industry and governmental agencies. Engagements range from high level audits to detail systems design and project management of development projects. To $35,000.

Software Engineer—Micro Operating System Design. Exciting young firm offers a unique opportunity to develop sophisticated microprocessor software. Position involves the design and development of micro-based systems for process control/industrial control industries. A background in operating systems or related peripherals is required. To $38,000.

Engineers—Hardware and Software. Growth-oriented firm seeks individuals with in-depth microprocessor background to assume project responsibility for the development of productivity measurement and monitoring systems. Three years experience with Assembler language in a real time environment desired. To $35,000.

Programmer Analysts—On-Line Application Development. Progressive Portland financial institution has multiple requirements for individuals with two or more years of COBOL or BAL experience involving financial applications. Company offers exceptional technical development programs and outstanding benefits. To $27,000.

Northern California

Programmers—Travel to Europe and the Orient. San Francisco Bay area based corporation is in the early stages of development on a worldwide order processing system and seeks professionals having at least two years of COBOL experience. Will participate in the design, implementation and installation of this network including travel to facilities located in Europe and the Orient. To $28,000.

New Development—Project Manager. Leading San Francisco based firm seeks a professional to lead one of the largest projects it has ever undertaken. Requires prior successful implementation of a large-scale, on-line data base system and good management skills. To $45,000.

Massive Data Center Expansion. Major San Francisco based company is dramatically expanding the staff of its new data center. Current new project efforts include both large-scale OS systems development as well as a significant effort in distributed processing. Openings currently exist at virtually all levels including Programmer Analysts, Systems Analysts, Project Leaders and Systems Programmers. Experience on either minicomputers or large-scale 370/OS equipment required. Starting salaries range from $18,000 to $45,000.

DOS Systems Programmer. Nationally known San Francisco based firm seeks a professional initially to support the existing technical effort and then move into a technical long-range planning position. Requires four years of IBM DOS/VS experience with good knowledge of internals and ALC. To $35,000.

RPG Programmer Analyst—International Travel. Systems division of a San Francisco based firm seeks a professional with two years of RPG II experience and an interest in international travel. Will be part of a major new development effort. To $35,000.

Have you ever thought of living on the West Coast? Source Edp now offers you a golden opportunity to take advantage of the cultural, educational and environmental atmosphere most people find so appealing about that part of the country. With 75 offices in the U.S. and Canada, Source Edp is North America's largest specialized computer recruiting firm. We currently maintain facilities in nine West Coast locations and represent organizations in all parts of California, Oregon and the State of Washington. These firms are diverse in size and industry and offer the broadest possible range of career opportunities available to computer professionals. Among them are some of the most sophisticated computer users, manufacturers and services firms in the world. A sampling of our current West Coast openings is presented below.

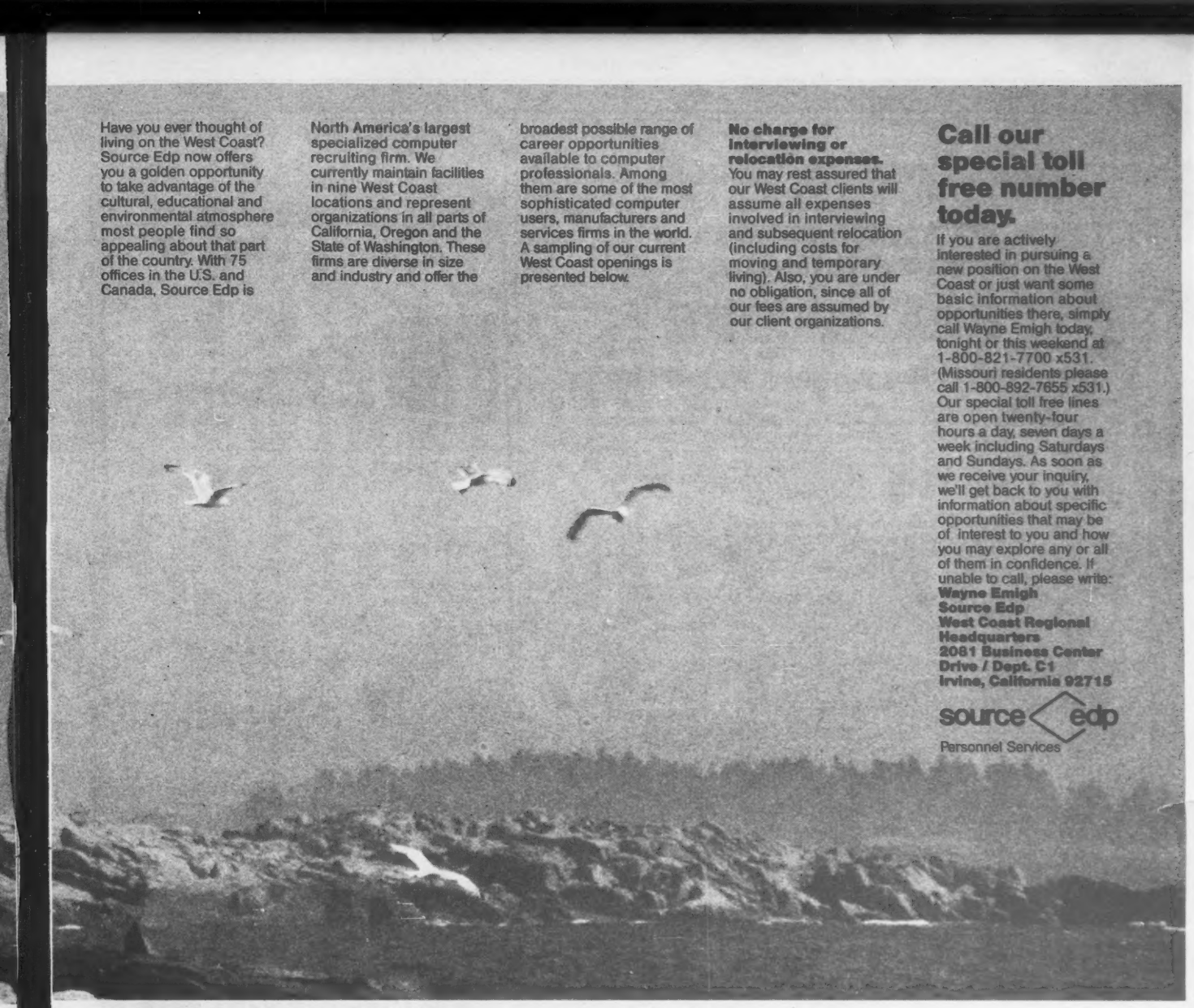
No charge for interviewing or relocation expenses. You may rest assured that our West Coast clients will assume all expenses involved in interviewing and subsequent relocation (including costs for moving and temporary living). Also, you are under no obligation, since all of our fees are assumed by our client organizations.

Call our special toll free number today.

If you are actively interested in pursuing a new position on the West Coast or just want some basic information about opportunities there, simply call Wayne Emigh today, tonight or this weekend at 1-800-821-7700 x531. (Missouri residents please call 1-800-892-7655 x531.) Our special toll free lines are open twenty-four hours a day, seven days a week including Saturdays and Sundays. As soon as we receive your inquiry, we'll get back to you with information about specific opportunities that may be of interest to you and how you may explore any or all of them in confidence. If unable to call, please write:

Wayne Emigh
Source Edp
West Coast Regional Headquarters
2081 Business Center Drive / Dept. C1
Irvine, California 92715

source edp
Personnel Services



lines are open 24 hours a day, 7 days a week.

Southern California

Systems Programming Manager. San Francisco based manufacturer seeks an experienced Manager to assume responsibility for all systems software activities. Requires five years of large-scale IBM OS systems programming experience and some supervisory exposure. To $45,000.

Scientific Programmer Analyst. One of the most advanced technical firms in San Francisco seeks a professional with FORTRAN experience and engineering systems background. To $35,000.

Telecommunications Project Leader. San Francisco peninsula company, one of the fastest growing micro computer manufacturers in the world, is seeking an individual with extensive telecommunications experience to assume a leadership position in the development of telecommunications software. This position will include the responsibility for project planning, project development and project management. To $40,000.

Mini/Micro Systems Programmer–Equity Opportunity. Start-up division of a San Francisco area company offers the opportunity for an experienced operating systems Programmer Analyst to adapt CP/M to a new hardware product. To $45,000 + stock.

Programmer Analyst–Suburban San Francisco. Progressive organization, located in a highly desirable San Francisco suburb offers an excellent opportunity for an experienced COBOL Programmer to gain CICS experience in a 4341 VM/CMS environment. To $30,000.

Programmers–Learn IMS. Rapidly expanding San Francisco area organization provides a unique opportunity for experienced Programmers to learn new skills in a major new IMS project. All program development is on-line in an IBM 3033/MVS environment. To $35,000.

New Corporate Data Center–Orange County. Fortune 500 organization is undergoing a major expansion and is in the process of centralizing all systems planning, programming, software and computer operations into a new corporate data center. The center, which is located in a highly desirable suburban Orange County area, will house the latest in IBM computer hardware and software technology including advanced data base, telecommunications, and distributed processing applications. Current openings include Programmer Analyst, Systems Analysts, Project Managers, EDP Auditors, System Programmers and Hardware/Software Planners. Starting salaries range from $18,000 to $35,000.

MI Director–New Data Center. Progressive firm in the electronics industry seeks a proven Manager capable of building a data processing organization from the ground floor. Will select equipment, hire staff and set direction for successful and growing firm. Suburban Los Angeles community. To $45,000.

EDP Audit Specialist–Extensive In-House Training. Fortune 500 organization headquartered in Southern California seeks an EDP Audit Specialist experienced in designing accounting applications in an IBM OS environment. Training in auditing techniques and advanced computing provided. To $25,000.

Sales Representative–High Income. Orange County office of a leading computer manufacturer is seeking a Marketing Representative with a proven track record of selling business systems. The average income of its sales force last year was over $50,000.

Programmer Analyst–Learn Data Base. Growing Los Angeles energy company seeks OS/COBOL Programmers who want to learn IMS and manufacturing applications. Presently developing new IMS systems for plant and building maintenance and shop floor scheduling. To $30,000.

Software Development–Minicomputers. Successful Orange County minicomputer manufacturer seeks professionals with operating system, compiler, data communications, data base or microprogramming experience. Company is committed to developing and sustaining a complete line of state-of-the-art systems software products. To $40,000.

COBOL Programmer–Newport Beach. Well-known diversified financial services firm seeks a professional with a minimum one year COBOL programming experience. Outstanding work environment overlooking Pacific Ocean. CICS, MVS training provided. To $28,000.

Programmer Analysts–Santa Barbara. Fortune 500 company located in a beautiful coastal setting two hours north of Los Angeles needs both mini and large systems Programmer Analysts. The organization provides excellent benefits including an exceptional relocation package. To $32,000.

FORTRAN Programmer–Business Systems. Fast-growing Los Angeles suburban financial firm seeks a professional with FORTRAN experience. Company is installing dual computers for on-line transaction-driven systems. To $35,000.

On-Line Project Leader. Reorganization of an established data processing group provides a major growth opportunity for a current Senior Analyst. Excellent location, near ocean and Los Angeles airport. Will direct 2 to 5 Analysts in the installation of a major on-line manufacturing system using IMS DB/DC. To $35,000.

Minicomputer Programmers–World-Wide Network. Prestigious organization near Santa Monica beach seeks experienced, on-line real-time Minicomputer Programmers to participate in the development of a world-wide financial communication network. To $40,000.

Senior Minicomputer Systems Programmer. Manufacturing company headquartered in San Diego has a requirement for an experienced PDP-11 Programmer who has worked on RSX-11M, RT-11 or IAS. Will be involved in a major effort to develop a state-of-the-art real-time system. To $26,000.

Multiple Career Path Opportunities. Major San Diego high technology organization with multiple large-scale computer systems, minicomputers and microprocessors is currently expanding its professional data processing staff due to projected business growth. Current requirements include Business and Scientific Applications Programmers with a proficiency in COBOL, ALC or FORTRAN; Systems Programmers with experience in OS/VS2/MVS, IMS or telecommunications; and Business and Scientific Systems Analysts to develop new systems utilizing structured design and IMS. Salaries range from $20,000 to $35,000.

RPG II Programmer–Management Opportunity. Consumer products firm seeks an experienced RPG II Programmer Analyst with management potential. Installation includes a S/34 with a future upgrade to a S/38. To $23,000.

MVS Systems Programmer. Large San Diego based organization seeks a professional to assist in the upgrade to MVS utilizing multi-CPU's and a large network of terminals. The company is one of the most stable organizations in the San Diego area, yet one of the most progressive in keeping up with state-of-the-art technology. To $39,000.

Systems Analyst–Move into Sales. Opportunity exists for a Systems Analyst or Programmer Analyst to move into the challenging role of a Sales Representative for a fast-growing computer services organization. Qualified applicants must have the ability to work independently and interface with various levels of technical and management people. San Diego location. Estimated first-year earnings $35,000.

Systems and Programming Manager–San Diego. One of the fastest growing companies in its industry is seeking an experienced professional to direct its systems and programming functions. Qualifications should include experience in project management in a large-scale systems environment. In-depth knowledge of financial systems preferred. To $35,000.

Data Base Systems Programmers. International corporation with a development group based in San Diego is seeking qualified individuals with a background in any data base system such as IMS, IDMS, TOTAL, DMS or System 2000. This group is currently developing a new data base system for future generations of computer systems. To $35,000.

On-Line Programmers–OS Environment. Major San Diego based organization has several openings for On-Line Programmers to participate in a system utilizing a large network of terminals tied to one of IBM's latest computers. Selected candidates will work in an OS/MVS CICS, IMS environment. To $30,000.

Minicomputer Programmer–San Diego Suburb. Division of a Fortune 500 corporation seeks a Programmer Analyst proficient in any high-level language (e.g., FORTRAN, PL/1, ALGOL, or PASCAL) to work on a variety of minicomputers (including PDP-11 and HP computers). To $26,000.

Project Manager–Retail Systems. San Diego based retail organization seeks an experienced Systems Analyst who has had project development responsibility of business systems. Will direct the efforts of a team of other Systems Analysts and Programmers in the development of data base information systems affecting all company operations. To $35,000.

CAD/CAM/Graphics Programmers. National firm in the process of expanding its software development staff in San Diego has an immediate need for several individuals with graphics and/or CAD/CAM experience using minicomputers. To $40,000.

Programmer Productivity

READYCODE

Our Technology...Your Opportunity

Raytheon Computer Services, **The Software Managers,** has advanced the state-of-the-art in COBOL application development technology.

Our ReadyCode Facility represents significant advances in software technology that has met with tremendous acceptance throughout industry — from insurance and finance to manufacturing applications.

Our software management services have given IBM mainframe users substantial productivity gains by minimizing programming details while delivering high quality structured applications software. Our clients report savings of up to 40% of their estimated development costs.

The success of our services and products means exciting, ground floor opportunities for individuals to join a young and dynamic organization, backed by the stability and resources of Fortune 100 Raytheon.

- **Project Managers**
- **Project Leaders**
- **Programmer/Analysts**

As we expand our client base, opportunities exist for key contributors to implement systems for commercial clients. We are seeking talented individuals from varied applications backgrounds from Programmers with 2 or more years of experience to Project Managers with a minimum of 10 years experience. A degree, experience with structured COBOL programming, and a familiarity with IBM Systems are preferred.

These positions, located in both our Wellesley, MA and Chicago, IL. offices, require minimal travel and offer opportunities for client interface. If you'd like to be in the vanguard of your profession, please forward your resume and salary history, in complete confidence, to Alan Ameigh, Raytheon Service Company, 2 Wayside Road, Burlington, MA 01803.

RAYTHEON COMPUTER SERVICES
A UNIT OF RAYTHEON SERVICE COMPANY

An Equal Opportunity Employer

DBMS PRODUCT DEVELOPMENT & SUPPORT

APPLIED DATA RESEARCH, the world's oldest and largest independent systems software products company, has positions available for DP professionals in state-of-the-art product development and support at our Dallas based **DATACOM DB/DC** product group.

Applicants must be skilled in IBM Assembly language and have a minimum of 3 years programming experience. Some data base, data communications and/or systems programming experience very desirable.

APPLIED DATA RESEARCH offers a very competitive salary commensurate with your background and potential and a comprehensive benefits package which includes semi-annual bonuses and dental, prescription drug and tuition assistance plans. For more information please forward your resume including salary history, in strict confidence to: Personnel Director.

APPLIED DATA RESEARCH, INC.
8515 Greenville Avenue
Dallas, Texas 75243

An Equal Opportunity Employer, M/F/H/V

ADR

Data Processing

Career Opportunities

Exxon Nuclear has recently established an aggressive Computer Services Organization and has opportunities in the following areas.

Programmer Analyst

2 years' college level training or equivalent experience in a technical area with 3 years' COBOL programming experience, CICS command level coding experience and on-line applications experience using CMS, CPF, OS/MVS required. Application experience with COMSERV's AMAPS application software, manufacturing application and IMS/DB experience desirable. This is a unique opportunity to join a dynamic manufacturing systems support team.

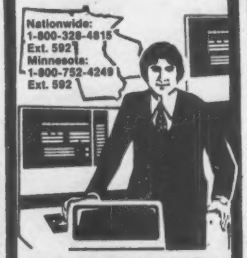
Systems Programmer

BS or equivalent with 5 years' experience in operating systems. Responsibilities will include trouble-shooting, user and vendor interface, software planning, performance analysis and capacity planning. VS1, MVS, VM/CMS experience required. IBM 4341, CICS, DL1, VS1 systems experience desirable.

Qualified and interested candidates please send your resume and salary requirements to: **Exxon Nuclear Company, Inc., Employee Relations Department/28, 2101 Horn Rapids Road, Richland, WA 99352.** We are an equal opportunity employer.

EXXON NUCLEAR COMPANY, INC.

EDP JOBS IN THE MIDWEST



Analysts, Project Leaders, Programmers with a year plus experience, let us help you find a position in Minnesota, Wisconsin, Iowa, North and South Dakota. Client companies assume our fee. Send resume or call

ELECTRONIC SYSTEMS PERSONNEL
858 TCF Tower, 121 So. 8th Street
Minneapolis, MN 55402

esp

EDP placement specialists since 1960
Member National Computer Associates

EXCITING CAREER OPPORTUNITIES IN INFORMATION SYSTEMS

The Southern California Gas Company, the nation's largest distributor of natural gas, has immediate needs for computer science professionals who can apply state-of-the-art computer technology on high visibility projects in the data acquisition area. The openings are in the Company's Distributed Computing department and are part of a team that will develop and install a million-dollar system over the next three years.

The ideal candidate should have a bachelor's degree in computer science with coursework in both hardware and software including classwork in assembler, compliers, computer architecture and FORTRAN. Coursework or experience in computer graphics, data base management, microprocessors, minicomputers (Dec, Data General, HP, etc.) and the development and maintenance of real time data acquisition systems is helpful. Strong oral communication skills a must.

Additional requirements: U.S. Citizenship or Permanent Resident Visa.

If you have 0 - 5 years experience in this area and desire an exciting opportunity with many areas for potential advancement send your resume including salary history to:

Berlinda Fontenot
Professional Employment Representative

gas

Southern California Gas Company
P.O. Box 3249, Terminal Annex
Los Angeles CA 90051

An Equal Opportunity Employer M/F

In Los Angeles, your great escape could take place in minutes.

As a Data Processing specialist at Northrop, you'll surround yourself with the benefits of a climate and location that lets you enjoy it all -- the arts, educational opportunities and the great outdoors. Every day. All year round.

Located in Southern California, Northrop offers the professional opportunities you seek plus the flexibility of lifestyle that makes hours off the job exceptionally pleasurable. And, you'll appreciate our location with easy access to beach, desert, and mountains.

If you're up for the challenge of membership in a department that supports corporate information systems activities at every level, look into career opportunities at Northrop.

Make the Great Escape that could last a life time.

Low desert – 45 min.
High desert – 98 min.
Beaches – 10 min.
Forest – 25 min.
Mountains – 30 min.
Big mountains – 40 min.
Very big mountains – 240 min.

Skiing – 70 min.
Better skiing – 180 min.
Sailing – 15 min.
Golf – 17 min.
Running – change your shoes
Cricket – 23 min.
Disneyland – 45 min.

Hollywood Bowl – 45 min.
Universities – 30 min.
Surfing – 10 min.
Knott's Berry Farm – 45 min.
Rollerskating – change your shoes again
Universal Studios – 50 min.

Griffith Park – 45 min.
Beverly Hills – 38.5 min.
Hollywood – 40 min.
Tijuana – 240 min.
San Diego Zoo – 180 min.
Sunshine – 7 seconds
Tennis – 10 min.

Computer Operations Personnel
Console Operators, Control Clerks, Tape Librarians.

Numerical Control Systems Support
Knowledge of IBM, APT-AC systems, FORTRAN, ASSEMBLY and familiarity with numerical control environment.

Data Base Analysts
Experience in IMS Data Base and Data Communications.

Scientific Applications Programmer Analysts
Experience with IBM 3033, Engineering and Graphics Applications, FORTRAN.

MVS Systems Programmers
Using SMP4, TSO and SPF maintenance tools.

Business Applications Programmers
To design and maintain business, finance, and manufacturing applications on large scale IBM computers.

We will arrange a personal interview for you. We will fly you to California, travel and accommodations paid, or we will send a representative to your location. Investigate the opportunities outlined above by sending your resume to:

Barbara Nettles
Dept. NDP-CW 1860
P.O. Box 4625
Long Beach, CA 90804

NORTHROP

Making advanced technology work
Northrop Corporate Data Processing Center
Equal Opportunity Employer M/F/H / Proof of U.S. Citizenship Required

position announcements | position announcements | position announcements | position announcements | position announcements

If You're Into EDP and "All That Jazz" You Should Be Working For MSS In New Orleans

We're Middle South Services, the technical and service arm of the Middle South Utilities System. Our continued growth has resulted in updating and expanding our EDP facility. This state-of-the-art IBM 3033 OS/MVS environment affords EDP professionals an opportunity to see their technical and creative abilities utilized to the fullest. We currently have opportunities for the following individuals to work in this progressive environment.

SCIENTIFIC ANALYST PROGRAMMER: Must be capable of developing information systems specifications, as well as coding, testing and documenting science-oriented computer problems. You should possess a B.S. in Computer Science, Mathematics or a science, with emphasis in a scientific discipline. A thorough working knowledge of high level programming language and the use of programming productivity aids is essential.

SYSTEMS PROGRAMMER: You'll install and maintain Operating System and Program Products to provide users with the highest level of service possible. We would prefer a B.S. in Math, Science, Engineering or Computer Science. You must be able to write programs in: assembler language, read System and Application Program dumps, and use Utilities, JCL, SORT and Linkage Editor. Familiarity with the installation standard high level language is required.

ANALYST PROGRAMMER: You'll develop information systems specifications, as well as code, test and document business-related information systems problems. Requires a B.S. in Computer Science, Accounting or Business, along with a thorough knowledge of high level programming language and the use of programming productivity aids. Familiarity with business applications is important.

SYSTEMS ANALYST: Working with user personnel, you'll determine information requirements and operational needs, as well as aid in planning, defining, analyzing and implementing business systems. Requires a B.S. in Computer Science, Accounting, Science or Business, along with a thorough understanding of information systems processing concepts.

Middle South Services not only offers you an environment that recognizes your achievements, but one that is truly conducive to your growth as an EDP professional. In addition, you'll have an opportunity to work and live in one of America's most beautiful and historic cities--New Orleans. The birthplace of jazz and home to four star restaurants, an exciting nightlife and all the nearby recreational advantages of the Gulf, the Mississippi, and Lake Pontchartrain, New Orleans is definitely one-of-a-kind. You will receive an excellent salary fully commensurate with your experience and expertise, as well as comprehensive benefits. For more information on the differences that a Midde South Career can make to your future, send your resume or call COLLECT:

Mr. Byron Heath
(504) 569-4960

Mr. Gary Silbert
(504) 569-4951

MIDDLE SOUTH SERVICES
P.O. Box 61000
New Orleans, Louisiana 70161
An Equal Opportunity Employer M F

Arkansas Power & Light Company
Louisiana Power & Light Company
Mississippi Power & Light Company
New Orleans Public Service Inc.

AFIA CAREERS... A WORLD OF DIFFERENCE

AFIA, a major worldwide insurance organization with ten full data processing centers in Europe and the Far East, is an important force in creating sophisticated products and services to the insurance community. The greater part of our staff, facilities and business is overseas, with our corporate headquarters in Wayne, New Jersey.

Consistent with our needs and your career goals, AFIA could be your passport to worldwide travel and outstanding professional growth in the following areas of expertise:

International Hardware/Software Management
Plan and administer hardware and software facilities worldwide including telecommunications management and recommendations regarding micros, minis or distributed processing for local offices. Strong technical background desired, preferably with IBM equipment.

International Systems Managers
Define objectives, plan and coordinate major systems development projects worldwide. Requires strong systems and management background, preferably from an insurance environment.

Implementation Specialists
Responsible for the implementation of major systems worldwide. Requires experience in DL/1, CICS and fluency in French. The willingness to accept 6 month to one year foreign assignments is also required.

Other openings for capable Data Processing Professionals are available in New Jersey, London, Paris, Rome, Austrailia and Japan.

Salary is commensurate with experience. 25% international travel. We offer an exciting professional environment.

For immediate consideration, please send resume complete with salary history and requirements, in confidence, to:

C. Davis Farmer
AFIA
1700 Valley Road, Wayne, New Jersey 07470
(201) 696-0200 • (212) 239-8770
An Equal Opportunity Employer M/F

AFIA
WORLDWIDE INSURANCE

AFIA. WE'LL TAKE YOU AS FAR AS YOU WANT TO GO

Assistant Director, Data Systems Operations

Florida Location

Our client is a dynamic communications systems manufacturer. Part of their success as an industry leader can be attributed to a large, advanced Univac + IBM shop.

Capitalize on your extensive Univac systems background, degree, and 5+ years of management experience. (Ideally your Univac experience has been in commercial/industrial ... not governmental ... operations.) As Assistant Director, you will have full authority to develop budgets and structures, while supervising the activities of several EDP/MIS Managers. Responsibilities will include Headquarters EDP operations, the telecommunications network (offices throughout the U.S.), Real Time Data Base (300+ terminals), and Interactive Systems.

If you're a self-starter who can work with internal/external personnel to diplomatically solve data management challenges ... and set future directions ... make your move to the sunny South. Send your resume and current salary in complete confidence to:

Industrial Recruitment Associates Inc.
P.O. Box 81365 -- Dept. 10115 • Cleveland, Ohio 44181

An Equal Opportunity Employer M/F - All Fees Company Paid

EDP SYSTEMS ANALYSTS/PROGRAMMERS

Would you like to have an extra $100,000 in your savings account? (in the next 5 years).

Consider this:
One of the world's largest and most stable oil companies
Large overseas, American community
Enjoy 6 weeks vacation per year
Travel world wide
Full-time, permanent position
Latest state-of-the-art systems
Substantial promotional opportunities
Immediate employment bonuses up to $5000
Tax-protected income and more

OR

Are you ready for a challenging advancement opportunity here in the Sunbelt?

Consider this:
Major U.S. energy and construction firms
The best systems & facilities money can buy
Flexible hours
Excellent pay
Unlimited promotional opportunities
Mortgage assistance
Relocation
Opportunity for international travel
Low cost-of-living area

Immediate openings for Analysts, Programmers, TP Specialists with experience in simulation, modelling, linear programming, utilities, seismic data acquisition, graphics, OR engineering, finance, power systems, inventory control, purchasing, distributed systems, payroll, or personnel systems are available to individuals with experience in one or more of these languages: PL/1, IMS/DB/DC, ADF, Mark IV, COBOL, FORTRAN, TSO (EASYTRIEVE, APL, SAS, IFPS) or (SPF), or LIBRARIAN.

Applicant experience should include some of the following: CRAY 1, IBM 3033, 3081, 370/158/168 or Amdahl V6/7/8, software experience with MVS/SE, JES/2, IMS/VS, IMS/ADF, IDMS, VTAM. Teleprocessing Candidates: IMS/TSO/SPF. All positions require BS/BA-level degrees and 3 years plus experience.

Excellent opportunities (both foreign and domestic) are also available for individuals with 4 or more years experience in the area of design, FAT, or operations of Process Computer Systems in the areas on power control, petrochemical SCADA SYSTEMS, etc. FORTRAN, assembly-level programming and diagnostics required, interactive graphics helpful in some areas.

Additional Outstanding U.S. opportunities exist for Programmers, Programmer Analysts and Systems specialists with BS BA-level degrees and 2-years minimum experience with some of the following: COBOL, Mark IV, CICS, IMS, TSO, PL/1, RPG, OS/VM, CMS, ALC, DOS, IBM 4331, IDMS, IBM 3705 (all Houston), or IBM SYS 34 with RPG II, (O&G, Miss.)

Also, UNIVAC 1100/80 (West Tex O&G), S/A, 6 years plus exp., P/A 3 years exp. (COBOL), SCIE PROG BS Chem ENG 3 plus years exp. in SIM, MODELING, STAT, PROC DESIGN. Plus LAB AUTOMATION, PDP 11/60, 11/44, 11/34 SUPPORT, CHEM/CS Degree, 3-5 years exp. with RSX-11M OP SYS IN FORT, PRS, ADABASE, or SYS 2000 (1 TREVOSE, PA/1 Houston). For these or other excellent EDP opportunities, you are encouraged to contact:

Mr. J. Arthur or Mr. Darrell Raithel
BY CALLING: 713-871-1500
or send resume to:

INTERNATIONAL PERSONNEL SERVICES
95 Briar Hollow East
Ste. 620
Houston, TX 77027

PDP/VAX Senior Business Systems Analyst

Long Island, New York

Subsidiary of international corporation seeks a Systems Analyst with strong business systems design skills.

Responsible for development of business systems utilizing PDP 11/70 and VAX 11/780 computers. Three plus years inventory and financial system design experience with a working knowledge of RSTS/E or VMS and Basic programming. Send resume to **Dalgety Inc., PO Box 5919, San Mateo, CA 94402, Attn: R.W. Winkler**

EOE M/F

DALLAS

IMS - INTERNAL CONSULTANT

Financial institution developing totally new systems for the job. Needs strong bkgrnd in DB/DC. High visibility involving long range planning for the future. Salary to low $40's.

2730 Stemmons Frwy., 1109W
Dallas, TX 75207, (214) 637-6360

DATA PROCESSING CAREERS inc

EMPLOYMENT SERVICE FOR PROGRAMMERS AND ANALYSTS

National Openings With Client Companies and Through Affiliated Agencies

Scientific and commercial applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering • Computer marketing and support

Call or send resume or rough notes of objectives, salary, location restrictions, education and experience (including computers, models, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide; you decide.

RSVP SERVICES, Dept. C
Suite 700, One Cherry Hill Mall
P.O. Box 5013
Cherry Hill, New Jersey 08034
(609) 667-4488

RSVP SERVICES, Dept. C
Suite 230, Dublin Hall
1777 Walton Road
Blue Bell, Penna. 19422
(215) 629-0595

RSVP SERVICES
Employment Agents for Computer Professionals

position announcements | position announcements | position announcements | position announcements | position announcements

"WE PROMOTE COMPUTER PEOPLE"

INTERVIEW & HIRING COSTS (INCL. RELO.) PAID BY COMPANIES

TOLL-FREE
1(800) 258-7328

Exeter Associates
NATIONAL RECRUITING CONSULTANTS
COMPUTER PARK, P.O. BOX 623
HAMPTON, NEW HAMPSHIRE 03842
(603) 926-6712
A COMPONENT OF EXETER INTERNATIONAL, INC.

Data Processing

IDMS VENEZUELA

DBMS, Inc. has an immediate need for a Sr. Level individual in Caracas, Venezuela. Long term assignment requiring DBA skills in IDMS, IDMS/DC and IDD. Must be a leadership person capable of directing an organization to the proper positioning of DA and DBA.

1 year assignment with possible extension. Excellent compensation and benefit package.

DBMS, Inc. provides a full range of software products and services through its offices in San Francisco, Denver, Chicago, Washington DC, Portland and Caracas and is undergoing extensive expansion to other major metropolitan areas.

Send your resume to:

DBMS, Inc.
1801 A Mill St.
Naperville, Ill. 60540
312-961-5700

Fortune
NATIONWIDE SEARCH:
TECH SUPPORT
SYSTEMS PROGRAMMING
APPLICATIONS
(Fin./Mfg./Sci.)
DATA BASE AD. (Jr. & Sr.)
19742 MacArthur Blvd., Suite 245
Irvine, California 92715
(714) 851-0311

Software Engineers

If you're a talented Software Engineer, intrigued with stretching your skills in some of the most important, most challenging work in your field, look into your key role at Ford Aerospace in one of these vital areas:

SR. SOFTWARE ENGINEERS
- Develop software design and development tools on the VAX 11/780 system with Programmer's Workbench.
- Analysis and development for command and control; integration and test.

SR. DATA COMMUNICATIONS ENGINEER—Design and develop state-of-the-art data communication system.

SOFTWARE SIMULATION ENGINEER—Software development for simulation trainer systems.

R&D SOFTWARE ENGINEER—Develop software for artificial intelligence and digital image processing algorithms.

R&D HARDWARE/SOFTWARE ENGINEER—Design and build prototype microprocessor based systems and peripheral interfaces for pilot engineering projects.

SR. REAL-TIME PROGRAMMING ENGINEER

CAE SOFTWARE SPECIALIST—Provide software development and support for circuit design and analysis and graphics system software.

CAE DATA BASE ADMINISTRATOR—Administer and manage engineering data base for corporate-wide integrated electrical CAD systems.

SR. MRP SYSTEMS DEVELOPMENT ANALYST

ATE SYSTEMS PROGRAMMERS—Develop ATLAS compiler, run-time interpreters and handlers essential to the DIVAD EQUATE test stations. Familiarity with high-level test languages required.

SR. QUALITY ASSURANCE ENGINEERS—Design and development of computer software programs with experience in software qualifications test plans, independent design analysis and software lab stress testing.

For immediate consideration, please send your resume to: **Professional Placement, Dept. CW-002, Ford Road, Newport Beach, CA 92660.**

U.S. Citizenship Required
Equal Opportunity Employer M/F

They said you'd be a key link in the chain of command

If you feel chained to a limiting engineering career, unlock your talents at Ford Aerospace & Communications Corporation.

We're at the threshold of an unlimited future. We've recently won the multi-billion dollar DIVAD contract. We're doing breakthrough work in a variety of other major projects. And we'll support your desires to explore, re-vitalize and even create technologies with a freedom you've never known before.

If you're tired of being held back, take a giant step forward in your career. Join us at Ford Aerospace & Communications Corporation, in beautiful Newport Beach, California.

Ford
Ford Aerospace & Communications Corp.
Aeronutronic and DIVAD Divisions

NEW ENGLAND'S FINEST

Quite simply, that's what we offer our applicants: contact with the FINEST Companies in New England. Through years of EDP placement specialization, we have a broad base of industrial, insurance, banking and service clients with openings at every level, including:

PROJECT LEADERS . . . . . TO 36 K
SYSTEMS PROGRAMMERS . . . . . TO 35 K
SYSTEMS ANALYSTS . . . . . TO 35 K
PROGRAMMERS ANALYSTS . . . . TO 30 K

And If New England isn't your cup of tea, we offer openings across the country through our affiliation with National Personnel Consultants (NPC). Naturally companies pay all fees, interview and relocation expenses.

Send resume or call A.J. Rachele, toll free: 1-800-628-3374. In Massachusetts call (collect) 413-781-0982.

MEMBER npc 130 affiliates coast-to-coast

dp Specialists
DYNAMIC PERSONNEL SYSTEM
51 Park Ave., P.O. Box 539
West Springfield, MA 01090

Enjoy The Country Club Setting Of Miami Lakes!

We're one of Southern Florida's most progressive and professional data processing service bureaus. Due to our continued rapid growth, we have outstanding opportunities for experienced:

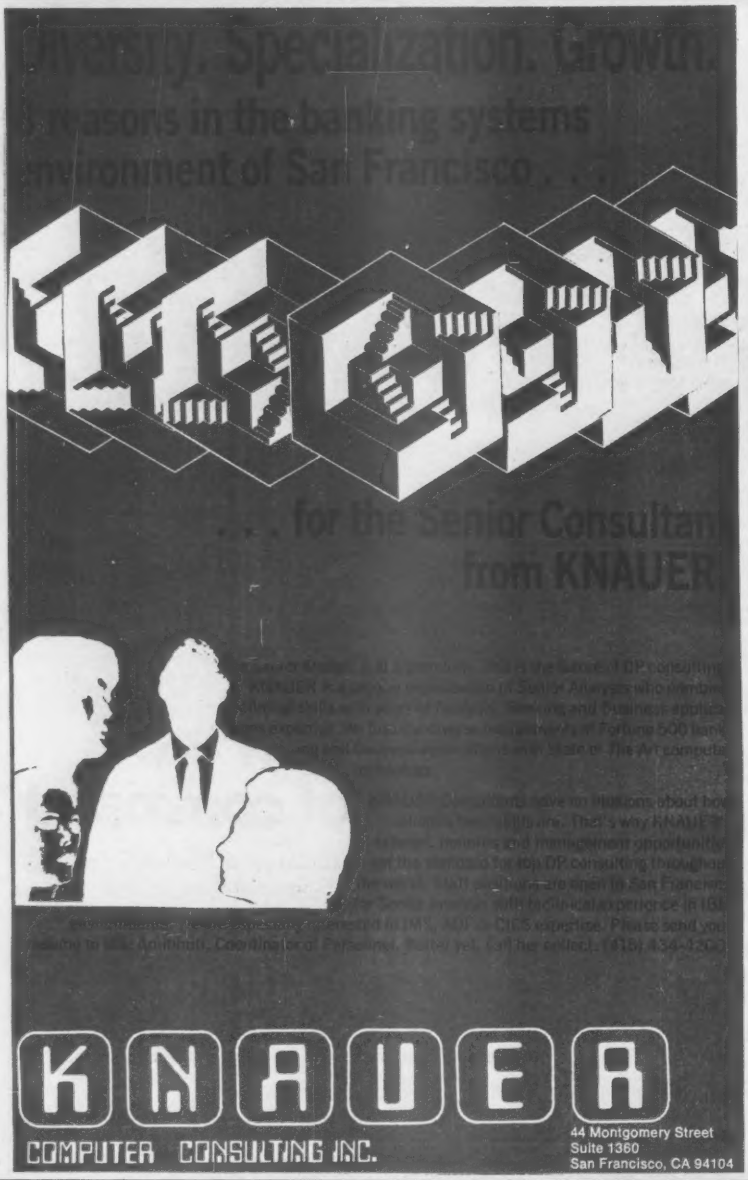
NCR Programmers

You must have a minimum of two (2) years programming experience on applications such as savings, DDA, Consumer and/or Mortgage Loans utilizing NCR - NEAT 3 language.

In addition to the opportunity for professional growth, we can offer you a highly competitive starting salary fully commensurate with your experience and expertise, as well as a generous benefits package including relocation expenses, annual bonus, dental, medical and life insurance coverage and a five year vested retirement plan. And then there's Florida with its superior lifestyle and abundant recreational advantages.

For confidential consideration, please send your resume, including salary requirements to: Personnel Department

FIRST FLORIDA FINANCIAL INVESTMENT, INC.
Subsidiary of Financial Federal Savings and Loan Association
8991 Southwest 107 Avenue
Miami, Florida 33176
Equal Opportunity Employer M/F



WANTED!

Data Processing Professionals

Our top quality sunbelt clients urgently need high caliber computer professionals.

Immediate openings exist for:

- **Computer Process Control Engineers**
- **Scientific Applications Programmers**
- **Seismic Applications Specialists**
- **Sr. Business Systems Analysts**
- **Systems Software Specialists**

These positions require a minimum of one year full-time work experience and a bachelors degree is strongly preferred in most cases.

If you meet these requirements and if you're looking for a new career opportunity with a dynamic employer, send your current resume in strictest confidence to:

Scientific Placement, Inc.
J.A. Koenig, Dept. 436
P.O. Box 19949
Houston, TX 77224
(713) 496-6100

All Fees are Paid by the Employer

Programmer Analysts

Our expanding data processing department offers opportunities for career-oriented data processing professionals to play key roles in meeting future objectives. Responsibilities include extensive contact with user departments for systems support, analysis, design and programming.

Applicants should have at least three years, or more COBOL experience in commercial applications. Experience with Burroughs medium systems in an online data base environment is preferable.

We are the 550-member staff serving 175,000 members. We offer a professional environment, many paid benefits, good working conditions and an excellent career potential.

Salary to high twenties.
Send resume to: Mrs. S. Mihelic
Personnel Dept. C 18

American Institute of Certified Public Accountants

1211 Avenue of the Americas
New York, New York 10036

An Equal Opportunity Employer

SYSTEMS PROGRAMMERS

With Heavy CICS or Heavy MVS

Joining ITT North Telecommunications Switching Division puts you where convergence of the "digital revolution" and new highly flexible computer capabilities give "state-of-the-art" exciting, fresh meaning. And to the qualified Systems Programmers, this convergence combined with our technological leadership, presents a challenging career opportunity in a modern up-to-date environment.

Currently, we have an IBM 3033 with OS/MVS, CICS, TSO/STF, Panvalet/SPF, JES 2, OS/JCL, COBOL and System 2000 data base. To qualify, you must possess a BS degree in Computer Science or Business, and a minimum of 6 years general Data Processing experience, at least 3 of which should have been spent as a Systems Programmer. Telecommunication experience would be helpful. Expertise in MVS/SP1 or SP3, JS2, SMP, Systems tunning or Systems Diagnostic Basic assembler language is also required.

To successfully carry out your duties, experience and training in architecture planning systems, job control language software packages for data base management, and an in-depth knowledge of all facets of large-scale computer hardware and central processors access methods are essential. You must possess superior analytical, written and oral communication skills.

If you're a qualified professional who is ready for the best of both worlds, along with a top salary and comprehensive benefits, you are invited to forward your resume, including salary history and requirements, in strict confidence, to: Ms. Sonja Cantrell, Department, CW-28. ITT North Telecommunications Switching Division, P.O. Box N, Carroll Reece Station, Johnson City, Tennessee 37601. An equal opportunity employer M/F

ITT

ITT North Telecommunications Switching Division

The best ideas are the ideas that help people.

PROGRAMMER/ ANALYST

Join a major and rapidly growing financial organization, headquartered in the Northeast. Our expansion, on a national scope, created the need for an experienced, career-minded DP professional.

You will require a minimum of 3-5 years experience, specifically in the UCC Financial Control System. Thorough knowledge of COBOL is essential, OS, VS-1 or MVS experience with OS JCL is preferred. Excellent communication skills and the ability to converse with financial users is also required.

This position offers an excellent salary and comprehensive benefits package plus a superb opportunity for professional growth and upward mobility. To explore this career opportunity, please send your resume, complete with salary history, in confidence to:

CW-A3184
Computerworld
Box 880
Framingham, MA 01701

Equal Opportunity Employer M/F

EDP INCORPORATED

Analysts
Programmers
Tech Specialists

Let us help you connect with opportunities in the ***Southeast!*** We can make your search for an outstanding career easier and more successful. Our clients have many challenging opportunities available which provide excellent compensation and benefits. Many have home purchase plans if relocation is necessary. Don't let that position you've always wanted pass you by - send your resume today! All fees paid by our client companies.

EDP INCORPORATED
Suite 104, Fairview Plaza One
Charlotte, N.C. 28210
704/554-1101

MEMBER OF EDP RESOURCE GROUP AFFILIATES NATIONWIDE

COMPUTER PROS

"Too Busy To Look?" Let Us Look For You.

Call 24 hours a day collect: (617) 938-0990
Or mail resume in total confidence.

- **Applications/Systems Programmers**
- **Business Analysts**
- **Project Leaders**
- **Communications/ Networking**

BA INC **BURLINGTON ASSOCIATES, INC.**
246 West Cummings Park
Woburn, Massachusetts 01801

Submit a resume in total confidence.

CLIENT COMPANIES ASSUME ALL EXPENSES REPRESENTING EQUAL OPPORTUNITY EMPLOYERS

SUNNY SOUTH!

If you are a programmer with at least 1 year experience and would like the most individualized career search available, please send your resume in confidence to:

SEARCH E.D.P., INC.

[illegible] N. Central Expwy.
[illegible]

SOFTWARE ENGINEERS

MOVE UP. IN A COMPANY WHERE STATE-OF-THE-ENGINEER IS AS IMPORTANT AS STATE-OF-THE-ART.

If you're an experienced software engineer, you owe it to yourself to take a good look at our company, where growth and long-term contracts are the rule, not the exception. Where a positive, stimulating environment keeps bright, creative people challenged and fulfilled. Where salaries and benefits are among the best in the business.

OPPORTUNITIES FOR SOFTWARE ENGINEERS:

- wide range of jobs:
  - -a real-time distributed/embedded software systems involving command and control, switching, communications, signal processing/analysis, DBMS, graphics, and man-machine interfaces
  - -also: research, systems engineering, requirements definition, design, implementation, testing
- state-of-the-art technology:
  - -mainframes: IBM 370/158, 3033, 3081
  - -minis: VAX 11/780, PE 3230, DG S/330, PDP 11/34, PDP 11/23, HP 21 MX, TANDEM
  - -micros: Motorola 68000, 6809
  - -special-purpose hardware: bit-slice processors using AMD 2900 Logic, parallel processors using Fairchild F 100K ECL, communications networks using NSC HYPER channel™ hardware, Multi-Megabyte Multiport Memories, and much more!
- broad range of languages:
  - -high order languages like Pascal and Structured FORTRAN
  - -assembly languages and Microcode
  - -PDL and Programmer's Workbench

If you have a degree and 3 or more years of experience, don't delay—send your resume to: **Professional Placement, E-Systems, Inc., Garland Division, P.O. Box 226118, Dept. MU41, Dallas, Texas 75266.**

E-SYSTEMS
Garland Division

The problem solvers.

An equal opportunity employer M/F, H, V.

M.I.S.
Remote Site Administrators

Immediate Opportunities Available In:
NEW JERSEY & TEXAS

Will coordinate activities of software and operations personnel at plant location, perform program maintenance, coordinate with Central M.I.S. Group. Positions require a minimum of 6 years data processing experience with 3-4 years of COBOL programming experience. Related degree preferred with Burroughs Medium or Small Systems experience. Some travel required.

Badische offers competitive salaries, good benefits and an excellent relocation package.

Send complete resume to: Paula Powell, Corporate Placement.

Badische Corporation
P.O. Drawer D
Williamsburg, Va. 23185

Badische

Member of the BASF Group BASF
an equal opportunity employer—m/f

Your Ultimate Choice

TIRED OF THE COLD?
MOVE TO THE BUCKLE OF THE SUNBELT!
SALARY AREA $30,000

The Data Processing Division of M. David Lowe is looking for experienced programmer/analysts to work at one of the best EDP departments in Houston. Our energy industry clients can offer you the best benefit package in the city as well as the opportunity to travel and/or work internationally, if you so desire. If you have experience with PL/1 or COBOL in a large IBM environment running IMS and TSO or experience in Fortran with CMI 2130 or IBM 1130 in a time sharing environment, we would like to talk with you.

For further information, please contact Ada Edwards or Marilyn Thomas at
(713) 445-6464.

ALL FEES ASSUMED BY CLIENT COMPANIES

M. david lowe
PERSONNEL SERVICES

475 Houston Natural Gas Bldg.
1300 Travis
(713) 445-6464
Houston, Texas 77002

TELEPROCESSING SOFTWARE SANTA FE, NEW MEXICO

The State of New Mexico has an opening in Teleprocessing Software at its main installation in Santa Fe. The operating environment includes a 370/158 running under VM/SP and RSCS, and a 3033N running under MVS/SE and NJE with CICS, ATMS/STAIRS, ACF/VTAM, ACF/NCP, and IDMS. Applicants must have extensive knowledge in CICS, ACF/VTAM, and ACF/NCP; as MSNF is currently being implemented, knowledge of MSNF would be a plus. At a minimum, applicants must have any combination of education and experience in computer-related fields, totaling at least 7 years, of which 2 must have involved experience in teleprocessing software programming.

SALARY: Up to $35,000. Depending Upon Qualifications.

Submit resume or contact Caesar Snee, Systems Software Bureau Chief, Automated Data Processing Division, 715 Alta Vista, Santa Fe, New Mexico 87503. (Phone: 505-[illegible]27-3271, extension 285.)

AN AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER M/F

DATA COMMUNICATIONS MARKETING PROFESSIONALS

At Atlantic Research Corporation, our Data Communications Division is on the move. We've been serving the data communications market since 1958, and now we're a leader in the field. With an increase of over 60% in sales in 1980.

We currently have openings for the following data communications marketing professionals:

- **Test Equipment Sales**
- **Field Service Test Equipment Sales**
- **National Accounts Sales**
- **International Sales**

Position requirements include knowledge in one or more of the following:

- Detailed knowledge of data communications protocols
- Knowledge of international sales practices, customs procedures and Carnets is highly desirable
- Previous employment with major communications firm is highly desirable
- College degree in Electrical Engineering or Computer Science or sufficient technical background in data communications is preferred

Major duties will include the following:

- Customer and representative training, conducting on-site demonstrations at customer facility and reviewing customer requirements
- Identifying major customers and coordinating technical staff, regional sales managers, representatives and customers
- Responsibilities for major budget and equipment acquisition decisions, executive presentations, seminars and training of service personnel
- Assisting representatives in preparing seminars and sales presentations of Atlantic Research products

Atlantic Research is a diversified high technology corporation trading publicly on the OTC (over the counter) exchange. Compensation for all positions is commensurate with level of experience. Interested applicants, please respond by calling Personnel COLLECT at (703) 642-4111 or send a resume to: Atlantic Research Corporation, 5390 Cherokee Avenue, Alexandria, Virginia 22314. An Affirmative Action/Equal Opportunity Employer. U.S. Citizenship is required.

ATLANTIC RESEARCH CORPORATION

JOIN ATLANTIC RESEARCH CORPORATION

STOP FIGHTING SNOW AND ICE
PLAY GOLF OR TENNIS IN TEXAS!!

We are a data processing placement service staffed by professionals with over seventy years of data processing experience. Our clients include a cross section of large and small companies in various industries, in **HOUSTON** and throughout the **Southwest.** Listed below are samples of our current requirements:

COBOL, RPG, ALC and PL/1 Programmers, degreed and non-degreed, DOS or OS, 1+ yrs. experience. Many, many openings. To $30K+

Engineering Consultant - Major energy firm seeks a degreed engineer with 5+ experience in the oil and gas business. Must have good systems background and know FORTRAN. Will consult with engineers throughout the company. To $45K+

IMS Systems Programmers with 1+ years of experience can qualify for several positions. Very liberal relocation benefits available. To $40K+

CICS Programmers with 2+ yrs. Command or Macro, MVS or DOS, COBOL or ALC. To $30K+

Senior Systems Analyst with manufacturing, Oil & Gas, Accounting or Banking, and large scale IBM experience. To $40K+

MVS or DOS/VSE Systems Programmer with 1+ years experience Communications or CICS a plus. $ OPEN $

Communications Software - Support large IBM telecommunications network. NCP/VTAM, SNA & MVS experience required. To $46K

EDP Auditors - We have several openings for experienced EDP Auditors. Degree, 1+ yrs. experience. To 35K+

IMS, ADABAS, IDMS Data Base Analysts with 2+ yrs. experience. Positions include P/A, Systems Analysts and Data Base Adm. $ OPEN $

Banking - Several openings for P/A's. Also opening for Manager responsible for planning, facilities, word processing, documentation and education. To $45K

Call or send resume to:

Bob Williams
ROBERT SHIELDS & ASSOCIATES
1550 W. Bay Area Blvd., Suite 101
Friendswood, Texas 77546
713/488-7961

TULSA
MANUFACTURING SYSTEMS

Several positions available in the manufacturing area from Systems Analyst to Senior Manufacturing Specialists. Experience in writing MRP and manufacturing support systems is greatly desired. We need self-starters with good Systems Analysis and trouble shooting skills. We are a rapidly growing sun-belt company providing time sharing services and software packages for heat treating and manufacturing on the HP3000. We are a subsidiary of Hinderliter Energy Equipment Corp. Familiarity with Data Base Management Systems, BASIC, and On-Line interactive techniques would be a plus.

We offer a full program of insurance and fringe benefits including dental insurance and performance bonuses.

Please send resume and salary history to:

Ed Knighten
Hinderliter Management Systems
P.O. Box 35505
Tulsa, OK 74135
(918) 494-0992

SIOUX VALLEY HOSPITAL

"SOUTH DAKOTA"
DIRECTOR OF DATA PROCESSING

The Director of Data Processing will manage the computer operations staff, equipment and operational activities of the department. Present system is NCR - I 9050/6580 Discs. Degree and hospital experience desirable. Candidates will have 5 plus years management and programmer/analyst experience with exposure to an on line/real time system.

If your interests include employment in a progressive and varied work setting located in a pleasant, clean and safe community, Sioux Valley Hospital and Sioux Falls are a great combination. Sioux Valley is a 448-bed acute care hospital offering total patient care to our community.

Please submit resume and salary history to:
SIOUX VALLEY HOSPITAL
PERSONNEL DEPARTMENT
1100 SOUTH EUCLID AVENUE -- P.O. BOX 5039
SIOUX FALLS, SD 57117-5039
1-605-336-3440
An Equal Opportunity Employer

F-O-R-T-U-N-E
OF SEATTLE, INC.

SR SYS PROG 38K
3 yrs, IBM, MVS, JES-2, TSO/SPF, great Northwest location, CICS, IMS, APL, CADAM are pluses.

PROJ LEAD 34K
Bank exp, branch delivery systems, on-line teller exp a plus, excellent visibility.

SR P/A 30K
Med-lrg IBM, COBOL, CICS, Bank exp, progressive firm.

SYS PROGRAMMERS 25K+
IBM, MVS, IMS DB/DC, CICS, VTAM, JES-2, TSO/SPF, NCP, telecommun.

If you have these skills call us confidentially. Positions at all levels in the beautiful Pacific States and Nationwide.

2200 6th Avenue, Suite 539
Seattle, WA 98121
(206) 682-0911
Exclusively Employer Fee Paid.

EDP CONSULTANTS
EDP Specialists Needed Nationwide To Become Consultants

Major consulting firms need consultants at staff, Senior Consultant, and Manager level in major cities nationwide. If you have outstanding technical and interpersonal skills, you can move into consulting NOW. A consulting career offers unparalleled professional challenge, variety, exposure, rapid advancement, travel, and excellent compensation.

Qualified candidates need 2 to 6 years experience with large mainframes or minicomputers as programmer, systems analyst, project leader or EDP auditor. Degree required; MBA a plus. Excellent communication skills good business image and flexibility to adapt to a variety of situations are necessary.

Starting salary $26,000 to $40,000; successful consultants will double their salary in 3 years.

Send resume to CONSULTANT RECRUITERS, Reply to CW-A3185, Computerworld, Box 880, Framingham, MA 01701

We are seeking to fill

632 EDP Job Openings in the San Francisco Bay Area

You'll find little evidence of recession in the computer careers market in the San Francisco Bay Area. Growth continues at a rapid and steady pace with heavy demand at all levels for qualified EDP personnel. Our client companies pay all fees, interview and relocation expenses.

The Computer Resources Group, Inc., is a long-established (9 years), highly respected (150 leading companies utilize our services), and alert organization (our data bank of computer professional needs is unmatched in the San Francisco area).

Send your resume today or call collect.

COMPUTER RESOURCES GROUP INC.

303 Sacramento Street, San Francisco, CA 94111
(415) 398-3535 or 3333 Bowers Avenue, Suite 130
Santa Clara, CA 95051 (408) 727-1658
AFFILIATES IN 27 MAJOR U.S. CITIES
National Computer Associates
An employer-retained professional placement service

Bay Area at it's Best

We're one of the **Best** EDP placement specialists in the San Francisco Bay Area. We know what companies are offering the best technology. Who's paying the best salaries. Where the best growth opportunities are.

We guarantee you personalized, professional help in matching your skills and ambitions to a career that will bring you the recognition and financial rewards you are seeking.

If you're an experienced D. P. Professional CALL COLLECT or RUSH your resume TODAY and maybe you too can become one of the Bay Area's Best.

LOGICAL OPTIONS
One Market Plaza, Spear Tower, Suite #2014C
San Francisco, CA 94105 • (415) 777-3900

Programmer Analyst

Leading Florida retailer is looking for an aggressive COBOL Programmer Analyst. Minimum of five years experience in new program development required. NCR medium to large scale mainframe experience desired. Knowledge of Cincom, TOTAL, Data Base and NEAT/3 a definite plus.

We offer the right individual a progressive growth environment and a competitive compensation package.

Qualifying applicants send resume with salary history today, in complete confidence. **(305) 625-2681.**

JByrons
A Jack Eckerd Company
Human Resource Division
15600 Northwest 15th Ave.
Miami, FL 33169
Equal Opportunity Employer

Systems Development

Dynamic corporation seeking talented professionals to support large scale design and implementation effort on IBM 4341.

- **Senior Programmer/ Analyst**
  Project leader experience
  Strong technical background
  Cobol/database experience
- **Senior Systems Programmers**
  MVS, CICS, IMS, IDMS internals
- **Data Center Manager**
  Hardware installation experience
- **Computer Operators**
  Excellent salaries, benefits and fringes. Please send resume to:

Computer Systems Technology, Inc.
1651 Lobdell Ave., Ste. 202
Baton Rouge, LA 70806
(504) 928-9750

500 DP OPENINGS

(ALL Fee Paid)

Prog/Anal (2 yrs COBOL, IBM 370)	20-30K
Prog/Anal (2 yrs RPG II, SYS 34)	18-25K
Prog/Anal (2 yrs DEC PDP 11)	25-31K
Prog/Anal (2 yrs COBOL, UNI 1100)	20-25K
Prog/Anal (2 yrs IMS or CICS)	25-36K
Prog/Anal (1 yr COBOL, BURR B-80	20K
Prog/Anal (2 yrs COBOL, HONEY 66)	25-34K
Sys Anal (3 yrs COBOL, IBM 370)	23-38K
Sys Engr (3 yrs IBM 370, IMS/DB)	25-35K
Hdwe/Sftwe Engr (3 yrs Z80, 8080)	25-40K
Sys Prog (3 yrs ASSEM or COBOL)	24-30K
Sys Prog (2 yrs IBM 370, OS)	20-25K
Sr Sys Prog (5 yrs OS or DOS/VSE)	30-35K
IMS/DB Analyst (3 yrs IMS/DB)	25-35K

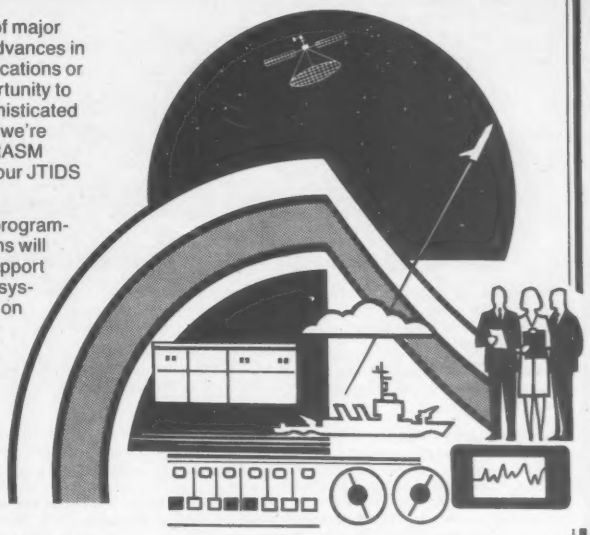
We are the largest employment agency in the southeast: affiliated with 155 offices coast to coast.

Rick Young - DP Dept.
CORPORATE PERSONNEL CONSULTANTS, INC.
3721 Latrobe Drive, Suite 310
Charlotte, NC 28211
704-366-1800

If it flies on aerospace software, Kearfott...and you... may well help create it.

As a company engaged in dozens of major projects that depend on software advances in flight, orbiting, command, communications or controls, we can offer you the opportunity to work in a DP complex that's as sophisticated as the ring laser gyroscope system we're developing for the Tomahawk-2 MRASM Cruise Missile. Or as advanced as our JTIDS communication terminal.

In engineering and scientific programming, your realtime software designs will operate airborne computers and support everything from aircraft navigation systems to inertial measurement units on the Space Shuttle...guidance controls for the Trident missile...ASW ...scanning beam landing systems...and much, much more. Have a background in simulation, linear systems, firmware for SW validation, Kalman filtering or FORTRAN? Then find out about our firmware projects.



In MIS—the expanding sphere that helps give Kearfott's rarefied environment a very solid basis—you'll run the gamut. Accounting. Finance. Payroll. Inventory and manufacturing controls. All involve COBOL programming, CICS, MVS, IMS, and data base design and telecommunications.

At our Data Center, you'll be joining an elite software systems group that maintains IBM and Amdahl mainframe computers with supporting software that includes MVS/SE-2, SE/A, JES 2, IMS DB/DC, CICS, TSO, WYLBUR, ACF/VTAM, ACF/NCP, SAS, information systems. And more.

So whatever your software specialty may be, there's a career path for you at Kearfott. You'll need at least 3 years experience in a large-scale IBM environment or HP 2100 MUX. If you're looking to accelerate your career, please send your resume to: Carol Batte, Singer Company, Kearfott Division, 1150 McBride Avenue, Little Falls, NJ 07424.

Kearfott
a division of The SINGER Company

An equal opportunity employer, m/f, who creates opportunities.

EXPLORE THE FOUR SEASONS IN SCENIC NEW ENGLAND!

Our client is a large sophisticated major employer located in a new suburban data center outside of Hartford, CT. The company benefit and relocation package is extraordinary including a home purchase option. The environment consists of multiple 3033's using MVS, TSO, CICS, IMS, and numerous state-of-the-art software packages. The types of positions that are presently available are:

- SYSTEMS CONSULTANTS - 10 yrs. exp. in all phases of Systems Development $38,000
- SYSTEMS PROGRAMMERS - 2-5 yrs. CICS exp. in software support $34,000
- LEAD SYSTEMS/ANALYSTS - 5-7 yrs. Analysis, design & P/L exp. $34,000
- SYSTEMS PROGRAMMERS - 2+ yrs. MVS, TSO, performance, modeling exp $34,000
- SYSTEMS ANALYSTS - 3-5 yrs. Analysis, design, programming (COBOL) $31,000
- PROGRAMMER/ANALYSTS - 2-4 yrs. programming in BAL or COBOL $27,000

All of these positions are open due to business growth and expansion. This company is truly a premier employer with an excellent reputation in the business community. For more information send resume or contact LEN COLLYER at:

DATA PROS
Owned & Managed By EDP Professionals

DATA PROS
176 Broad St.
Windsor, CT 06095
(203) 683-0403

NEW YORK/NEW JERSEY CONTRACTS
Unique Opportunity to Enter
INDEPENDANT CONSULTING
to $300/day
FULL TIME
to $50K
Career Advancement, Inc.
275 Route 18
East Brunswick, NJ 08816
212-888-5172
201-238-7060

Data Processing Programmers

Expanding Sparks, NV distribution center has openings for application and system programmers. Software includes DOS/VSE, CICS/VSE, DL/1 and ICCF. Excellent benefits package and salary DOE. If you desire a challenging career with a rapidly growing company submit resumes to:

Mass Merchandisers
PO Box 2008
Sparks, NV 89431

PROGRAMMER ANALYST

Prominent Midtown New York City business organization has several positions available for Programmer Analysts with 2 years experience in systems design.

We offer a stable and congenial atmosphere, competitive salary, excellent benefit programs, and state-of-the-art technology—IBM 4331 DOS/VSE, ISAM, VSAM CICS LIBRARIAN and distributive processing through a network of minicomputers.

Responsibilities include involvement in design, development, programming, testing and implementation of accounting or corporate records management systems. Good oral and written communication skills required.

Submit resume including salary expectations to:
MR. R. CHIANESE, Personnel Dept.
CT Corporation System
1633 Broadway
New York, N.Y. 10019

AT CODEX, WE DON'T FOLLOW TRENDS, WE MAKE THEM.

It's natural to look for exceptional careers in data communications at Codex. We offer the kind of opportunities that only a leader in the field of data communications can provide. Codex is developing and manufacturing intelligent terminals, part of a sophisticated network for distributive data processing. Our rapid growth is a testament to the need for our solutions and the high standards of our products. As an integral part of a major corporation, we offer professionals a working environment that encourages creativity and a fresh flow of ideas.

If you'd like to contribute your skills and knowledge to a company that recognizes and rewards ability, consider these opportunities for:

SOFTWARE ENGINEERS

We have immediate openings for Engineers with microprocessor operating systems, C compiler experience in a UNIX operating system environment and firmware development for peripheral device controllers.

A BS or MS in Computer Science or related field or equivalent experience is desired plus a minimum of 3 years experience with microprocessor systems software.

SR. COMMUNICATIONS ENGINEERS

We have immediate openings for Engineers with communications experience including 3270, 2780/3780 and SNA/SDLC. Responsibilities include the definition and implementation of communications systems software in a multiuser microprocessor based intelligent terminal.

A BS or MS in Computer Science or related field or equivalent experience is desired plus a minimum of 5 years experience in the implementation of communications systems software.

Our location in Tempe, Arizona offers the ideal lifestyle for the professional who likes to work hard and play hard. Enjoy year-round outdoor activities, splendid scenery and a wide range of cultural and educational opportunities. We offer a complete benefits package including liberal relocation allowance, profit sharing, tuition reimbursement, medical and dental insurance and much more. Submit your resume or letter of inquiry in confidence to: **Personnel Manager, Codex Corporation, Dept. 122, 3013 S. 52nd Street, P.O. Box 22345, Tempe, Arizona 85282.**

Codex is an Equal Opportunity/Affirmative Action Employer M/F

codex

A Subsidiary of MOTOROLA INC.

Programmers Programmer Analysts System Programmers

Bring Your Expertise to Panasonic Famous For Outstanding Advanced Products

We're Hiring Selected Individuals As Part Of A Rapidly Growing Professional Team At Our Corporate Facility in Suburban New Jersey.

If Your Experience Includes the following:

- 3-4 Years COBOL
- CICS Command Level
- DL/1 Data Management
- OS/MVS

Let's Sit Down And Talk!

RAPID ADVANCEMENT OPPORTUNITIES
SALARY OPEN

Our growth creates opportunities for your professional advancement. Excellent benefits, in-house education, and individualized career development. To assure prompt consideration, please forward your resume WITH SALARY REQUIREMENTS to: Personnel, Dept. FE, Panasonic Company, One Panasonic Way, Secaucus, New Jersey 07094.
An equal opportunity employer.

Panasonic®
just slightly ahead of our time.

SKI VERMONT! SAIL LAKE CHAMPLAIN!

Burlington, Vermont, located between Lake Champlain and Vermont's major ski areas, combines the charm and attraction of a vacation spot with the stimulating experience of living and working in a progressive metropolitan area which offers a state university, small colleges, a major health facility and several fast-growing, nationally known companies.

The University of Vermont, located in Burlington, has openings for qualified Systems Analysts and Analyst/Programmers. All applicants must have a Bachelor's Degree, preferably in a scientific or business related discipline. Postion requirements range from two to ten years of combined experience in programming and systems analysis in a data processing environment. Senior positions require a heavier concentration of systems analysis. Experience with COBOL and IBM systems is essential. Applicants with expertise in higher education applications, DBMS and online sytems are preferred. Salary to $30K, commensurate with qualifications and experience. **Send resume and the names of three professional references by March 1, 1982, to University of Vermont, OMIC, 238 Waterman Building, Burlington, Vermont 05405.**

An Affirmative Action Employer

EXECUTIVE DIRECTOR
HEALTH SCIENCES COMPUTING FACILITY

Responsible for the operation of the Health Sciences Computing Facility (HSCF) located in the Harvard School of Public Health. HSCF consists of multiple computer systems and a staff of twenty-five professionals and supporting personnel. The Executive Director is responsible for formulating and implementing services for the HSCF. The Facility provides local and remote machine services, programming, data base management, and word processing to over 1000 users in the Harvard School of Public Health, Harvard Medical School, Harvard School of Dental Medicine, and other health institutions. HSCF has an annual budget of $1.5 million derived from research and instructional funds.

Minimum Requirements:

Administrative experience providing computing services for a technical or biomedical community. Advanced degree in a relevant discipline preferred.

Harvard University is an Equal Opportunity Employer with an Affirmative Action Program.

Send C.V. and letters of support to:
Dr. Joseph D. Brain
Department of Physiology
Building I-1302
Harvard School of Public Health
665 Huntington Avenue
Boston, MA 02115

SOFTWARE CAREER OPPORTUNITIES IN HOUSTON, TEXAS

SII Drilco, a Division of Smith International, a leading manufacturer of Oilfield Tools, has immediate openings, offering challenging Data Processing Careers.

SENIOR PROGRAMMER ANALYSTS

PROGRAMMER ANALYSTS

Responsibilities will include development of New Batch and Online Financial and Manufacturing Systems, and assist with Implementing Modifications and Enhancements to Existing Systems. Also Help Desk Operation, and Communications Support.

CICS SYSTEM PROGRAMMER

Responsibilities will include development and support of a medium size VTAM/CICS/SNA/SDLC Network.

DATA BASE ANALYST

Responsibilities will include data base design, creation, and access control in an IMS/DB environment with CICS.

- 2+ years experience
- COBOL/EASYTRIEVE
- TSO/SPF
- MSA PAYROLL/PERSONNEL
- CICS/VSAM/IMS
- OS/MVS/JES 2
- MAS II

Drilco offers excellent salaries and company benefits. Please send resumes to:

SMITH SII DRILCO
Division of Smith International, Inc.
P.O. Box 60068/
16740 Hardy Rd/
Houston, Texas 77205
1-800-231-6002

No Agencies Please!

An Equal Opportunity Employer M/F

LARGE SCALE
Honeywell
COMPUTER PROFESSIONALS

Data Image is looking for people with experience in:

- GCOS
- TDS
- DM-IV
- COBOL-68 & COBOL-74
- IDS-I
- GRTS

SUNBELT LOCATION

data image CORPORATION
R. L. Bras
3736 Eubank N.E.
Albuquerque, N.M. 87111
(505) 294-4084

COMPUTER FACULTY POSITIONS
Computer and Information Sciences

Two tenure-track faculty positions in a baccalaureate program offering concentrations in software systems, information systems and systems analysis. Research and instructional computing facilities include a Burroughs B6810 mainframe and a DEC PDP 11/44 running under UNIX. Minimum requirements: M.S. in computer science or related field; and appropriate experience in industry or college teaching. Ph.D. desirable. Rank and salary dependent on qualifications. Starting date: September 1, 1982. Deadline for Applications: April 15, 1982. Send resumes to:

Director of Affirmative Action, Search Committee CIS, SUNY/College at Old Westbury, Old Westbury, New York 11568.

AFFIRMATIVE ACTION/ EQUAL OPPORTUNITY EMPLOYER

PROG/ANALYSTS
SYST/ANALYSTS
NORTHEAST, NEW ENGLAND

When making a career decision, you should have a choice of options.

Our clients - who are large and small leaders in all types of business and industry - seek individuals with programming, analytical and/or leadership ability.

We individualize our search to meet your career objectives and geographical preference.

Investigate professional opportunities offering a variety of challenges and environments.

Phone collect or forward your resume to ERWIN KLAGGE.

cp computer professionals
Data Processing Placement – Executive Search
179 Allyn St., Ste. 200, Hartford, CT 06103

COBOL PROGRAMMER

We have an interesting position for a highly capable Senior Programmer to develop and maintain COBOL programs for our Honeywell L-64 using GCOS.

This position requires 2 years previous experience, preferably within a manufacturing environment. A wide variety of applications, including on-line.

Eldon Industries is a rapidly growing multi-division corporation which can offer an excellent salary and benefit package. Send resume or contact **Mr. Casey Sisneros.**

Eldon Industries, Inc.

2701 W. El Segundo Blvd.
Hawthorne, CA 90250
(213) 757-2151
Equal Opportunity Employer M/F/H

If You're Looking For A
DP Career In Oil And Gas...

Go With A Leader!

Santa Fe Energy is one of the nation's fastest growing independent oil and gas companies. We're already the fourth largest in the United States. And because we're committed to aggressive exploration and development, we're growing even more.

Our Data Processing Department is currently using an IBM 370/168 with state-of-the-art software. And our committment to growth dictates that we maintain this high level of technology.

WHY WORK IN AMARILLO?

Amarillo's climate (at 3,600 feet altitude) is mild. Summers are warm and winters are cold, but neither are extreme. In fact, the sun shines almost every day in Amarillo. Amarillo has a culture rooted in the Old West, but it's grown up. We have a full symphony orchestra, an excellent art center, a theater group and dinner theaters, first-run movies and 21 channels of Cable TV.

Boating, fishing and hunting are only minutes away. And New Mexico's ski slopes are within 5 hours.

Plus, you can drive anywhere in town in less than 20 minutes (even at rush hour!). And the crime rate is low! Amarillo is a great place to live–for you *and your family!*

Santa Fe is looking for:

Systems Analyst—With 5+ years experience, the most recent three to four years with IBM OS COBOL.

Programmer/Analyst—Three to 5 years experience, the most recent 3 years with IBM OS COBOL.

Programmers—One to 3 years experience, the most recent one year with IBM OS COBOL.

Planning/Analyst—5+ years experience in IBM 370 series OS/VS1 or MVS.

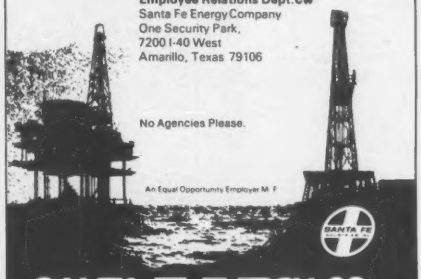
Standards and Procedures Analyst—5+ years experience in data processing/quality assurance. Must have good interpersonal communication skills.

Santa Fe offers a liberal benefits package, highly competitive salaries and the opportunity for real professional growth. Send your resume in confidence to:

Employee Relations Dept. CW
Santa Fe Energy Company
One Security Park,
7200 I-40 West
Amarillo, Texas 79106

No Agencies Please.

An Equal Opportunity Employer M F



SANTA FE ENERGY CO.

AN EQUAL OPPORTUNITY EMPLOYER

SENIOR TECHNICAL MANAGER

The Navy's major research, development, test and evaluation activity located at the foot of the Sierra Nevada on the upper Mojave Desert has an opening for:

● **DIRECTOR OF COMPUTER APPLICATIONS, and ASSISTANT RESEARCH DEPARTMENT HEAD FOR COMPUTER SCIENCE**

○ QUALIFICATIONS:

- ○ NATIONAL STATUS AS AN EXPERT IN COMPUTER APPLICATIONS
- ○ POSTGRADUATE WORK IN COMPUTER SCIENCE, ENGINEERING, MATHEMATICS OR THE PHYSICAL SCIENCES
- ○ EXPERIENCE MANAGING RESEARCH OR DEVELOPMENT PROGRAMS
- ○ A HIGH DEGREE OF TECHNICAL ORIGINALITY, INITIATIVE AND CREATIVITY

Apply by 31 MARCH

NAVAL WEAPONS CENTER
ANN-092-380-4
CHINA LAKE, CALIFORNIA 93555

U.S. CITIZENSHIP REQUIRED

IMPROVEMENT MOVEMENT!

EXPERIENCED DP PROFESSIONALS

Using state of the art technology to supply financial services has helped us become Houston's number one bank. To meet the needs of our customers in 1982, First City National Bank is committed to even greater growth than that achieved in 1981. Our rapid expansion has led to the creation of several key positions for talented professionals. Over 100 banks in the Southwest are processed bvy First City National Bank's current Data Processing installation consisting of twin IBM systems 370/168 and series 3081 mainframes under an OS/MVS operating system. We utilize IBS DB/DC, COBOL, ALC and VTAM/SNA in tandem with DEC PDP 11/70 mini under RSX 11-M. All career opportunities require banking and/or financial systems experience.

•PROGRAMMER/ANALYSTS

2+ years in an OS/MVS environment and project management experience. Successful candidates will possess a background in one or more of the following:

- •MSA Payroll
- •Diebold ATM Debit Card Processing
- •CPCS (Proof Capture)
- •Trust
- •Accounting
- •Time Deposits
- •Productivity/Training

We are also looking for one project leader with mini-computer experience on a DEC PDP 11-70 using an RSX 11-M operating system.

•SYSTEMS PROGRAMMING

Opportunities include 8-10 years in-depth working experience with IBM MVS Operting Systems and related program products. Areas of expertise should include the following: JES 2, IMS, TCAM, BTAM, VTAM, SNA, RMF, SMP Performance Tuning, SECURE, RACF. These positions support the planning, installation and testing of operating systems and subsystems, operating system related program products' and in-house written technical programs. These positions will also provide consultant services to all FCSC divisions regarding Technical Data Processing.

Houston has more to offer in a bigger way than most American cities. We have no state or local income taxes. Plus, there is a vitality to our city that creates a positive setting for any ambitious professional. As a leader, First City National Bank offers excellent benefits, relocation, and training for our professionals. For more details, complete and forward our FAST RESUME to:

First City National Bank, Professional Recruiting F.C.E. 800 Dept. ROCW 2-8, P.O. Box 2557, Houston, Texas 77001. Equal Opportunity Employer

**REACHING FURTHER.
DOING MORE.**

THE *FAST* RESUME©

NAME _____
ADDRESS _____
CITY _____ ZIP _____
HOME PHONE _____
HARDWARE _____
OPERATING SYSTEMS _____
NUMBER OF YEARS DATA BASE _____
NUMBER OF YEARS IMS _____
LANGUAGES _____

Principles Only.

First City National Bank, Professional Recruiting Department ROCW 2-8, P.O. Box 2557, Houston, Texas 77001.

FIRSTCITY™
First City National Bank of Houston

position announcements | position announcements | position announcements | position announcements | position announcements

PROGRAMMER/ANALYSTS

WORK FOR DASD, BRANCH OUT AND GROW.

An Equal Opportunity Employer M/F
Atlanta
Appleton
Baltimore/Washington
Chicago
Dallas
Denver
Des Moines
Detroit
Houston
Indianapolis
Jacksonville
Kansas City
Los Angeles
Miami/Ft. Lauderdale
Milwaukee
Minneapolis
Omaha
Philadelphia
Pittsburgh
Portland
San Francisco
Seattle
Tampa

Have you at least three years' experience as a programmer/analyst? Then we have nationwide opportunities for you. Our salaries are competitive. Our benefits are generous. And we have a network of U.S. branches from coast to coast—serving all kinds of business and industry.

You can work with a variety of hardware, people, languages and data processing environments. And our specialized training will keep you up to the nanosecond in fast-changing computer technology.

For all the details—and a confidential interview, just call Wally, tollfree, at 1-800-558-5148. (In Wisconsin, call 414-355-3405.)

DASD™
Member of the Cap Gemini Sogeti group

DASD Corporation
Corporate Services Center
Dept. 138
9045 N. Deerwood Drive
Milwaukee, WI 53209

PEOPLE/PRODUCTS/RESULTS

Director of Direct Marketing Services

As the world's leading publisher of computer-related newspapers and magazines, we are extensively involved in direct marketing, and we have an excellent opportunity for someone who can supervise our DM activities. You'll be working on the direct marketing of a variety of products, including three paid circulation publications (*Computerworld, Computer Business News* and *InfoWorld*), our broadcast division, special publications, and business shows and conferences.

Your responsibilities will include supervision of our DM agency in the creation and production of all direct mail materials, testing and supervision of other direct marketing techniques, coordination with management, budgeting and planning.

To qualify you should have extensive and demonstrable experience in the planning and conducting of direct marketing campaigns and activities. Experience with subscription promotion or other publishing activities is preferred, but not required.

We offer excellent compensation based on experience, profit-sharing, a comprehensive benefits package and the chance to grow with a very successful medium-sized company located in the suburbs of one of America's most liveable cities.

To apply, send your resume or a detailed letter including salary requirements to Marion Kibbee, Assistant to the President, CW Communications/Inc, Box 880, 375 Cochituate Rd, Framingham, MA 01701. CW Communications is an equal opportunity employer.

CW COMMUNICATIONS/INC.

Northern Arizona Unversity located at 7000 feet in the beautiful southwest mountains. Is expanding the computer services department. The following positions are currently open:

Computer Operations Supervisor II $21,080
Familiarity with operations environment programming languages and JCL desired.

Software Analyst $25,280
Knowledge of systems programming with 5 years experience with large operating systems preferred.

Programmer Analyst II & III $21,275 & $23,185
Experience with interactive computing COBOL, DATABASE, and structure programming preferred.

Send letter of interest and resume to: Northern Arizona University, Personnel Department, Box 4113, Flagstaff, AZ 86011

An Equal Opportunity/Affirmative Action/Title IX Section 804 Employer

NEW HAMPSHIRE
$25 - $45K

Applications and Systems Software
Micro/Mini/Mainframe

Management Advisory Services Inc

Colonial Office Park
48 Constitution Drive
Bedford, NH 03102
(603) 472-8844

Fees and relocation expenses company paid.

Programmer Analyst

Would you like to move South with year round golf and six months beach season? Young shop with excellent growth potential, good pay and fringe benefits needs Programmer Analyst with at least two years HP3000 experience using COBOL, Image, View and Querry. Manufacturing systems definately a plus. Applicants only send resume or call toll free **800-845-5428** or in South Carolina **803-537-9341, Personnel Manager, INA Bearing Company, PO Box 390, Cheraw, SC 29520**

THE ARECIBO OBSERVATORY

SENIOR SOFTWARE ENGINEERS

The Arecibo Observatory, site of the world's largest radio/radar telescope, invites applications for Senior Computer Staff positions. Typical projects will include design and enhancement of real-time data-taking systems and operating system augmentation. The Arecibo Observatory supports pre-eminent research in the fields of Radio Astronomy, Radar Astronomy, and Atmospheric Physics, and offers a challenging high-technology environment in a Caribbean setting. Salary competitive. Benefits include moving expenses, medical and life insurance, TIAA/CREF, and tuition for English language school.

Contact:

P.M.B. Shames
Head, Computer Department
The Arecibo Observatory
P.O. Box 995
Arecibo, Puerto Rico 00612

CORNELL UNIVERSITY is an affirmative action/equal opportunity employer

Programming Manager

Sunny South Texas

Live where others vacation in one of the fastest growing regions in the nation. Enjoy the Rio Grande Valley, gulf coast beaches, and Old Mexico. Work in our progressive University environment as Manager of the administrative programming staff. DECsystem-10 Shop using COBOL and an integrated database. Successful candidate will be heavy in application systems analysis, management expertise, and technical leadership.

Mail resume or contact:
Personnel Office
Pan American University
Edinburg, Texas 78539
(512)381-2551

TRIMBEC EMPLOYMENT CONSULTANTS inc.

Specializing in career placement of EDP personnel of all disciplines. Our nationwide clients offer opportunities spanning the full spectrum of the Data Processing Field. Send resume, salary history and geographic preference to the attention of Adele Durham, Data Processing Division. All inquiries will receive immediate response.

425 Electronics Parkway
P.O. Drawer 40 Liverpool N.Y. 13088 (315) 451-4220
WE KNOW THE PEOPLE YOU NEED TO KNOW

We Specialize In
DATA/VOICE COMMUNICATIONS
$25K to $45K
We have many outstanding opportunities throughout the nation.
Voice/Data Networking
Hardware/Software

FORTUNE
154 Broad St.
Nashua, NH 03063
(603) 880-8880

GIVE YOUR CAREER A SHOVE IN THE CLASSIFIED PAGES OF COMPUTERWORLD

DET NORSKE VERITAS

COMPUTER APPLICATIONS PROGRAMMER/ANALYST

Since 1864, Det Norske Veritas has been setting the Standard for the protection and safety of life, property and environment both off-shore and on-shore. As one of the major international ship classification societies, Det Norske Veritas establishes Rules and Guidelines for the shipping and off-shore oil industry, including: classification, quality assurance and certification of ships, structures, installations and systems with related research.

We are seeking a **Computer Applications Programmer/Analyst** with programming experience in FORTRAN. Capability in operating systems for UNIVAC 1100, IBM 300, CYBER 175, 176, and VAX computers is needed. Knowledge of Structural Engineering and/or Hydrodynamics concepts, and 3-5 years related experience is required. This position has Management potential.

Competitive salaries and benefits are complemented by advanced training and orientation in Oslo, Norway. Assignments to follow at the Corporate Headquarters in Houston, Texas. Qualified candidates may contact Dr. Dave Alba for further information at (713) 578-0328 or send your resume to:

DET NORSKE VERITAS, 16340 Park 10 Place Dr. #115, Houston, Texas 77084.

DET NORSKE VERITAS

An equal opportunity employer, m/f.

Engineering

FOCUS YOUR CAREER WITH SANGAMO WESTON IN FLORIDA!

UNDER CLEAR, BLUE SKIES WITH A MEAN TEMPERATURE OF 73,° WE'VE QUIETLY ADVANCED BEYOND STATE-OF-THE-ART. Data Systems Division, a substantial member of the SANGAMO WESTON family, is continuing to secure a role of leadership in the challenging field of turnkey Telemetry and Industrial Supervisory Control Systems, through remarkable technological advancements. Our product line is envied throughout the industry for its high level of technical sophistication and strict adherence to quality assurance. Our goal, through the combined efforts of our professional family, is to produce the most advanced systems in the world. To successfully meet this end, we are seeking the following key individuals:

SOFTWARE ENGINEER

Position requires experience in the design and implementation of real-time systems utilizing structured methodology. Experience with RSX-11M or VMS operating systems and assembly language/FORTRAN also required. Knowledge of graphics, data base implementation or SCADA systems is highly desirable. Project leader position requires prior experience with proposal generation and cost estimating.

SOFTWARE INSTRUCTOR

Position requires experience with DEC minicomputer operating systems and desire to teach. Individual must be willing to travel 20% with occasional international travel possible.

These stimulating and challenging assignments are available in the beautiful beach community of Sarasota, on Florida's gorgeous Gulf Coast. Sarasota enjoys a respected school system, safe, attractive residential communities, a low tax structure and NO STATE INCOME TAX. Our year 'round recreational climate will enhance your personal lifestyle while the professional environment at Data Systems Division will accelerate your career development. For confidential consideration, please submit your resume, including salary history to:

Dan Harriger, Manager of Professional Employment

SANGAMO WESTON
Schlumberger

Data Systems Division
SANGAMO WESTON, INC.
P.O. BOX 3041
SARASOTA, FLORIDA 33578
OR CALL COLLECT:
(813) 377-5594
An Equal Opportunity Employer

EDP Project Analysts

New York State Electric and Gas Corporation, Ithaca, New York

is looking for qualified people to join our Computer Services Department. We are an investor owned utility serving 700,000 customers covering over one-third of the area of New York State. These positions are in our corporate offices located in the heart of the Finger Lakes Region noted for its wide variety of year round outdoor and cultural activities and educational facilities.

Our computer environment includes: Amdahl V6-II, IBM S370/168 AP, remote and local 3270's, IMS/VS DB/DC ROSCOE, PANVALET, PL/1, and graphics.

The position uses skills acquired through two years or more of analytical experience, and it offers a broadening of skills, as well as growth potential. The successful candidate will be designing and guiding the implementation of batch and on-line application programs and systems. The job requires knowledge of JCL, Data Base and on-line systems, and excellent oral and written communication skills. Previous experience in the design and implementation of large scale technical or business applications using a high level language is desirable. A four year degree in Computer Science, Business, Engineering, or related field is desired. IMS, PL/1, SAS, MPSX is a plus.

We offer an excellent salary and benefits package and relocation assistance. Please send your resume to:

Ms. Lark Nichols, Personnel Manager
New York State Electric & Gas Corp.
Box 287 Ithaca-Dryden Road,
Ithaca, New York 14850

An EEO Employer M/F

SYSTEMS PROGRAMMER

LOOKING FOR AN INDUSTRIOUS INDIVIDUAL TO FILL THE POSITION OF SYSTEMS PROGRAMMER FOR AN OS/VSL SYSTEM WITH CICS/VS. THIS INDIVIDUAL WILL MAKE HARDWARE AND SOFTWARE RECOMMENDATIONS AND BE RESPONSIBLE FOR THE PERFORMANCE OF THE COMPLETE SYSTEM. SEND RESUME AND SALARY HISTORY TO:

PERSONNEL DIRECTOR
BEACON MANUFACTURING COMPANY
P. O. BOX 395
SWANNANOA,
NORTH CAROLINA 28778-0395
AN EQUAL OPPORTUNITY EMPLOYER

NEW MEXICO
PROGRAMMER/ANALYST

Rapidly growing electric generation and transmission cooperative needs Programmer/Analyst to support corporate planning department. Qualified candidates will possess:

- relevant degree or equivalent
- two years experience in Fortran and financial or corporate modeling
- experience in statistical analysis and engineering applications plus exposure to system design and project life cycle techniques would be desirable

Offering a competitive salary and benefit program including tuition assistance. Send resume and salary history to: **PLAINS ELECTRIC GENERATION & TRANSMISSION COOPERATIVE INC., 2401 Aztec Rd. NE, Albuquerque, NM 87107**

Affirmative Action/Equal Opportunity M/F/H

position announcements | position announcements | position announcements | position announcements | position announcements

EXPERTISE
...If you have it, we'll pay for it.

There's a lot to be said about working with a $1.1 billion leader. In highway transportation services -- it's Ryder. It means a prime professional atmosphere -- an ultra-modern facility and state-of-the-art IBM 3033 MVS IMS environment. And it means an ideal location -- situated within easy access to major freeways and near South Florida's primary recreational and cosmopolitan attractions. Current opportunities include:

HARDWARE AND TELEPROCESSING ANALYST

Minimum three years experience diagnosing communication, mainframe and peripheral problems, developing short and long range physical equipment plans, and coordinating the installation of equipment. Thorough knowledge of teleprocessing software/hardware (including VTAM, NCP, 3705's) and the IBM MVS operating environment required.

COMPUTER SYSTEMS DESIGNER

Minimum two years programming analysis experience in an MVS, TSO, COBOL environment preparing system and program designs, coding, testing, and implementing new systems or system modifications/enhancements. Four Phase programming or IMS experience a plus.

CONFIGURATION PLANNING AND CONTROL ANALYST

Minimum four years experience evaluating, recommending and cost justifying equipment including configuration analysis and modification planning. Thorough understanding of MVS system software and detailed knowledge of IBM and IBM compatible equipment features, inter-relationships, capabilities and trade-offs required.

Your expertise will be rewarded with our outstanding salary and comprehensive benefits including professional relocation services, stock purchase program, tuition reimbursement, and fully paid medical, dental, and life insurances. Discover our ideal location... and our superior professional atmosphere. For immediate confidential review, send your resume or information letter or call collect 305-593-3833.

RYDER TRUCK RENTAL, INC.

M. Anderson
P.O. Box 520816
Miami, Florida 33152

An Equal Opportunity Employer M/F

RYDER

SR. PROGRAMMER
$2378 - 2870 mo.

University of California, Riverside has an immediate opening for a Sr. Programmer. The successful candidate will supervise programmers providing statistical and programming assistance on faculty and student research projects; designs, implements, maintains and documents software on UNIX and IBM computers; establishes standards and operating procedures for faculty, staff and students; plans, prepares, presents and coordinates formal workshops on data processing, computer applications, languages, etc. for VAX/UNIX, VAX/VMS, PRIME and IBM. Requires degree in Computer Science or related field. An extensive knowledge of FORTRAN, 4 years of programming experience, and ability to communicate well in all modes. Experience with both IBM and VAX/UNIX hardware/software is desirable. Position is open until filled. A resume and 3 references should be sent to:

UNIVERSITY OF CALIFORNIA

Staff Personnel Office
1166 Administration
Riverside, CA 92521
An affirmative action/
equal opportunity employer

ff-o-r-t-u-n-e
Communications Group

NATIONWIDE SEARCH:

DATA/VOICE COMMUNICATIONS HARDWARE/SOFTWARE DEVELOPMENT/USER

19742 MacArthur Blvd., Suite 245
Irvine, California 92715
(714)851-0311

ARKANSAS TECH UNIVERSITY FACULTY POSITION

Teach computer and/or management science courses in a degree program similar to DPMA/ACM/AICPA business oriented recommendations. Emphasis is teaching. Associate, assistant professor, and instructor level available. Tenure track and temporary positions beginning summer or fall, 1982. Doctorate preferred. Masters and bachelors with good experience considered. Rank and salary dependent on experience and qualifications. Search open until March 1 and thereafter until filled. Contact: Don B. Mitchell, Head, Computer and Management Science Department, Arkansas Tech University, Russellville, AR 72801. AA/EOE

EDP OPPORTUNITIES
NEW YORK, NEW JERSEY, LONG ISLAND

MGR-Hardware, software plan anal, 3031 distrib, micro $43M
S/A-Deg, 3033, MVS, learn IMS DL-1, COBOL OS req $40M
EDP AUDIT Sup-B.S. Accting/Comp Sci, 2 yrs. sup exp ..... $37-41M + Bonus
S/A-Deg functional design, fin sys dev ..$37M
PROJ MGR-Money market, arbet, FX $35-39M
TRAVEL-Natl sys/ana, implement comm loan $33M

Call Bill Borrelli (212) 349-3610
WM. HARRIS ASSOC.
150 Broadway agency NY, NY 10038

INDIANA STATE UNIVERSITY
Terre Haute, IN

The Math/Computer Science Dept. anticipates several Computer Science tenure track positions for the fall of 1982. The number of positions is subject to budgetary considerations. The department offers a B.S. in Computer Science. Salary and rank are dependent on qualifications. Applicants should have the experience to teach core courses in the program. Preference will be given to applicants with Ph.D. Send vita and 3 letters of recommendation to:

Dr. Jerry Harahany, Chairman
Math/Computer Science Dept.
Indiana State University
Terre Haute, IN 47809

Applications received after March 1, 1982 cannot be guaranteed consideration

Indiana State University is an Equal Opportunity/Affirmative Action Employer

REAL-TIME PROGRAMMER ANALYST

Seeking a software engineer in Denver experienced in developing Real-Time Data Collection Systems. We offer a unique and challenging opportunity to manage an HP1000 System that will be developed with GRAPHICS, IMAGE, PASCAL, FTN4X, DS1000 in a product test laboratory.

If you have a degree and strong experience in developing Real-Time Data Collection Systems with RTE IVB and IMAGE, send your resume including salary requirements to B. Price, Personnel, The Gates Rubber Company, P.O. Box 5887, Denver, Colorado 80217.

DP MANAGER

LUVIT, a nationally known and rapidly growing Los Angeles-based sportswear manufacturer needs a mature and dynamic individual to take charge of systems development and the data processing functions. Extensive manufacturing experience and strong administrative skills are a must. Experience in an IBM System/38 environment and in RPG 3 necessary. The right individual can expect a challenging environment, excellent salary and benefits and a bright future. We will relocate if necessary. Send resume to:

LUVIT
9601 Canoga Avenue
Chatsworth, CA 91311
Attn: Reese Lokitz.

No agencies please

NCR CIS
Systems and Programming Manager

Project control and supervision experience required. Direct staff of four analysts. Officer position with great potential for advancement.

Programmer/Analyst

Inhance and maintain CIS and FOCIS. Minimum two years experience with NCR CIS.

Both positions offer excellent salary and benefits including stock ownership plan. Fort Smith is a western Arkansas community of 100,000 offering great climate, mountains, lakes and a moderate cost-of-living. Send resume with salary history in confidence to:

City National Bank
V. P. Human Resources
P.O. Box 47
Fort Smith, AR 72902

FLORIDA

availABILITY

All Expenses Paid

Our clients, in urgent need of your expertise will pay all your expenses in relocating you to an area of Sun & Fun, No State Tax.

Average Temperature 75°.

PROGRAMMER ANALYSTS
SYSTEMS ANALYSTS
SYSTEMS PROGRAMMERS
DATA BASE ANALYSTS

AVAILABILITY, INC.
813/872-2631
Dept. C, P.O. Box 25434
Tampa, Florida 33622

TEXAS

Texas offers unparalleled opportunities for d.p. professionals. More headquarters/d.p. centers for major corporations than any state. Top salaries - no state income tax. Advance your career. Positions available nationwide. Call or write John Krieger, President

Dunhill of Richardson
293 W. Campbell
Richardson, TX 75080
214/644-5404
Dallas/Ft. Worth/Metroplex

HIGH SCHOOL INSTRUCTIONAL COMPUTER COORDINATOR

Missoula County High Schools, an equal opportunity employer, is in need of a High School Instructional Computer Coordinator. Person will be responsible for providing training and assistance to instructional staff in the areas of computer assisted instruction, guidance information systems, and general computer programming for instructional uses. Knowledge of BASIC and its application in instructional areas needed. Experience on an HP 3000 desirable. For further information, contact Personnel Office, 915 South Ave. West, Missoula, MT 59801 or phone 728-2400, Ext. 203.

Univac 1100 Analyst
Washington DC, Los Angeles, San Francisco

Exceptional opportunities now exist with the premier Univac 1100 consulting firm. If you have a minimum of three years experience on Univac 1100 mainframes then you owe it to yourself to investigate the advantages of being an associate of our firm. As a consulting associate you will enjoy working with your peers in challenging and stimulating assignments while receiving a liberal salary and excellent benefits. You're invited to submit your resume to:

Database Management Assoc., Inc.
2820 West Maple, Suite 211
Troy, MI 48084
Attn: Mr. Fred Markman
(313) 649-3119

CAREER OPPORTUNITIES
Computer Services Division:

- Analyst I
- Analyst II
- Analyst III
- Analyst IV
- Technical Specialist III (Data Base)

Excellent salaries and benefit package. If interested, please call 701/223-0441 Ext. 2430 or send resume in confidence to address below. An Equal Employment Opportunity Employer M/F.

BASIN ELECTRIC POWER COOPERATIVE
1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501

HIRING?

More computer people read Computerworld than any other newspaper in the United States- more than half a million computer people every week. And, among our 332,000 readers at user organizations about half claim to look at recruitment ads at least every other week (only a small percentage say they never look at recruitment ads). No wonder Computerworld carries more recruitment ads for computer people than any other publication.

To place your ad or to get a rate card with complete details on Computerworld Classifieds, call or write:

Classified Advertising
Computerworld
PO Box 880
Framingham, MA 01701.
(617)879-0700.

OPPORTUNITIES

No one can show you more than NCA.

The secret to steady computer career advancement is to make sure that each move you make is upward rather than lateral. The best way to achieve this objective is to review a maximum number of opportunities from which to select those that meet your career goals. We confidently believe that no one can show you a greater selection of excellent growth opportunities, both locally and nationally, than National Computer Associates.

Don't just move to another position. Advance your career. Do it the easy way. Contact the NCA firm nearest to you. Come in. Call. Or mail your resume. Confidentiality is assured. Employers pay our fees. Opportunities! No one can show you more than NCA.

National Computer Associates

ATLANTA: BAI Limited
229 Peachtree Street, Suite 1601-C
Atlanta, Georgia 30303 (404) 581-0040

BOSTON: Robert Kleven and Co., Inc.
North Brook Park, Suite One, 181 Bedford Street
Lexington, Massachusetts 02173 (617) 861-1020

CHICAGO: Thos. Hirtz & Associates
150 N. Wacker Drive, Suite 1700
Chicago, Illinois 60606 (312) 977-1555

CLEVELAND: Professional Staffing Systems, Inc.
4807 Rockside Road, Suite 300
Cleveland, Ohio 44131 (216) 524-5500

COLUMBUS: Michael Thomas, Inc.
65 E. Wilson Bridge Road, Suite 201
Worthington, Ohio 43085 (614) 846-0926

DALLAS: DataPro Personnel Consultants
12720 Hillcrest, Suite 520
Dallas, Texas 75230 (214) 661-8600

DENVER: EDP Infinity, Inc.
6000 E. Evans Avenue, Building 2-111
Denver, Colorado 80222 (303) 753-1788

DETROIT: Electronic Systems Personnel, Inc.
3000 Town Center, Suite 2580
Southfield, Michigan 48075 (313) 353-5580

FLORIDA: Data Sciences Personnel, Inc.
P.O. Box 8577
Hollywood, Florida 33024 (305) 434-6112

HARTFORD: Compass, Inc.
900 Asylum Avenue
Hartford, Connecticut 06105 (203) 549-4240

HOUSTON: Career Consultants, Inc.
2000 South Post Oak
Houston, Texas 77056 (713) 626-4100

INDIANAPOLIS: Computer Personnel Services, Inc.
107 N. Pennsylvania
Indianapolis, Indiana 46204 (317) 634-4712

KANSAS CITY: Electronic Data Personnel, Inc.
7600 State Line, Suite 225-C
Prairie Village, Kansas 66208 (913) 642-1554

LOS ANGELES: Constellation Enterprises
3250 Wilshire Boulevard, Suite 607-K
Los Angeles, California 90010 (213) 487-0616

MILWAUKEE: EDP Consultants, Inc.
11430 W. Bluemound Road
Milwaukee, Wisconsin 53226 (414) 475-0077

MINNEAPOLIS: Electronic Systems Personnel
858 Twin City Federal Tower, 121 S. 8th St.
Minneapolis, Minnesota 55402 (612) 338-6714

NEW JERSEY: Systems Search
2040 Millburn Avenue
Maplewood, New Jersey 07040 (201) 761-4400

NEW YORK: Botal Associates, Inc.
7 Dey Street, Suite 410
New York, New York 10007 (212) 227-7270

NEW YORK UPSTATE:
CFA Associates Personnel, Inc.
2530 James Street
Syracuse, New York 13206 (315) 463-5225

NORTH CAROLINA: DataMasters,
Div. of TaskForce, Inc., P.O. Box 6888
Greensboro, North Carolina 27405
(919) 373-1461

PHILADELPHIA: Systems Personnel, Inc.
207 Fox Lane
Wallingford, Pennsylvania 19086 (215) 565-2920

PHOENIX: Professional Career Consultants
3521 North Central Avenue
Phoenix, Arizona 85012 (602) 274-6666

PITTSBURGH: Electronic Systems Personnel, Inc.
Lawyers Building, Suite 400, 428 Forbes Avenue
Pittsburgh, Pennsylvania 15219 (412) 391-6450

SAN DIEGO: Electronic Systems Personnel Agency
2657 First Avenue
San Diego, California 92103 (714) 239-0811

SAN FRANCISCO: The Computer Resources Group,
Inc. Agency, 303 Sacramento Street
San Francisco, California 94111 (415) 398-3535

SEATTLE: Houser, Martin, Morris & Associates
1340 116th Avenue N.E.
Bellevue, Washington 98004 (206) 453-2700

ST. LOUIS: Executive Resource
1010 Collingwood Drive, Suite 105
St. Louis, Missouri 63132 (314) 993-3232

WASHINGTON D.C.: ESP Systems Corporation
914 Lamberton Drive
Silver Spring, Maryland 20902 (301) 649-6171

SENIOR GENERAL SERVICES ANALYST

Consumers Power Company is seeking a Senior General Services Analyst to assist in the development of new computer systems for a variety of application areas within our General Services Department.

RESPONSIBILITIES: Indentify application and manage the development of computerized General Services Systems. Activities include: Project management, supervisory responsibility, detail design and programming, development of economic cost/benefit analysis and interaction with major department heads.

REQUIREMENTS:

- B.S. Degree in Business Administration/ Computer Science
- Advanced Degree preferred
- 4-7 years programming/analysis experience
- Experience in the design and implementation of computerized management information systems
- Experience in computer project development and management
- Excellent communication skills

Consumers Power Company is a major investor-owned gas and electric utility operating in the lower Penninsula of Michigan. This position is located at the Company's General Office in Jackson, Michigan.

If you are interested in this opportunity for growth and a challenging work environment, please send your resume including salary history, in confidence to:

Professional Employment Office
CONSUMERS POWER COMPANY
Department SGSA-82
1945 W. Parnall Road
Jackson, Michigan 49201

An Equal Opportunity Employer M/F

DATA PROCESSING PROFESSIONALS

Don't let a lack of knowledge of the marketplace serve as an obstacle to your career development. Through our network of offices we can assist you in exploring new job opportunities and inform you on industry and salary trends. No obligation-just call or write Keith Reichle, CPC, Data Processing Specialist.

Dunhill
of CHARLOTTE, INC
6401 Carmel Road, Suite 107
Charlotte, North Carolina 28211
704-542-0312

HARDWARE FIELD ENGINEER

A Northwest independent Maintenance organization is in need of 2 IBM large system trained field engineers in Portland, Oregon. Engineer must have a minimum of 4 years experience on IBM or IBM compatible equipment. Excellent growth opportunity in the beautiful northwest.

Please send resume to
Dynamic Computer Maintenance Inc.
3609 S.W. Corbett
Portland, Oregon 97201
Or Call Dean Myers at
503/241-3194

Position Vacancy Announcement

Director, University Computer Center, San Diego State University. The Director is responsible for the effective management of the central data processing organization and for the coordination of instructional and administrative computing activities of the campus. Strong leadership traits and a well-developed understanding of the problems and prospects of computing in a university environment are primary requirements of this office. Salary commensurate with qualifications. Letters of application or nominations, along with supporting documentation, should be addressed to: **Dr. Frank A. Medeiros, Associate Vice President, for Academic Affairs, San Diego State University, 5300 Campanile Drive, San Diego, CA 92182-0420**

The closing date for this position is March 5, 1982.

San Diego State University is an Equal Opportunity Affirmative Action Employer.

CAREER GROWTH

That's what Technical Software Specialists can expect at Ætna

Aetna Life & Casualty is one of the nation's largest diversified financial companys. Our size translates out to more project opportunities for Technical Software Specialists like you. Plus, Aetna training programs will add muscle to your already impressive background. For instance, learn the technical internals of teleprocessing software. Access methods. And data base management systems. Lots of project opportunities. Heavy duty training. You know what that means. Carrer growth, pure and simple.

Right now Aetna is scouring the country for top-notch Technical Software Specialists hungry for advancement. Once on board you'll support the development of on-line data base systems. This includes logical and physical data base design. It also includes providing guidance to programmers on DB/DC protocol.

The salary you command is directly related to the experience you've got. It's highly competitive and worth investigating. Then there's Life, Medical, Dental and Disability insurance. And that's just for openers.

If your strength is in BAL, and you have a working knowledge in MVS, TCAM, IDMS, CICS, or DL/I send your resume to Mary Scott, Corporate Recruiting, Aetna Life & Casualty, 900 Asylum Avenue, Hartford, Ct 06156. An equal opportunity/affirmative action employer.

Ætna LIFE & CASUALTY

position announcements | position announcements | position announcements | position announcements | position announcements

Software Specialists

Boston Edison is an investor-owned public utility charged with the responsibility of furnishing reliable electric and steam services. Currently we have immediate openings for a Senior System Software Specialist, and a System Software Specialist.

Senior System Software Specialist

Day to day responsibility for a large scale IBM communications network including installation and problem resolution. Principal duties include system generation, maintenance and tuning of Data Communications and data base software including ACF, VTAM, NCP, TSO and IMS DB/DC. Requires a minimum of five years IBM system software experience and a strong communications background. MVS experience is a plus.

System Software Specialist

You will work with a software support group in the installation and maintenance of the software for a large scale IBM system. Principal duties include work on installation and maintenance of software components including MVS, IMS DB/DC and TSO as well as problem determination and resolution. Requires a minimum of three years experience with IBM system software and a strong assembler language and debugging background.

Interested applicants should send a resume, complete with salary history to: Boston Edison, Employment Office, P-350, 800 Boylston Street, Boston MA 02199.

Your future is here. With an industry leader. **Boston Edison.**

An equal opportunity employer M/F/HDCP.

Programmer/Analyst

Full time position. Requires two or more years experience in COBOL. Knowledge of RPG, B1000 equipment, ODESY, CANDE, GEMCOS and DMS helpful. Salary open. Computer used for administration and instruction. Letters and resumes until February 19, 1982 to: **Fred Halenar, Director Of Computer Center, Spoon River College, Rural Route 1, Canton, IL 61520**

Spoon River College is an EEO/AA Employer

PERSONAL INTEREST PROFESSIONAL COURTESY

COBOL,CICS mfg. systems	$20-35K
FORTRAN,APL	$21-30K
RPG II, MAPICS	$22-28K
PL/1, IMS a plus	$18-28K
Project Mgr.,mfg.	$25-33K
Database Admin	$29-36K
Systems Prog. Telecom	$25-30K
Operations Mgr.	$30-45K
Systems Prog.,large IBM	$26-36K
EDP Audit	$26-32K
Software Eng.,graphics	$27-35K
Micro Assembler	$15-28K

Resume to Carol Stuart
D.P. Division
ETHAN ALLEN PERSONNEL AGENCY
30 W. State St.
Binghamton, N.Y. 13901

FACULTY POSITION IN BUSINESS DATA PROCESSING

The Computer Information Systems Department welcomes applications for a faculty position available September 7, 1982. A Bachelors degree required, Masters preferred. Minimum of three years business data processing experience required. Requires strong interest in undergraduate instruction and ability to teach courses in several of the following areas: Systems Analysis, Programming Languages, Teleprocessing, and Data Base Management. **Send complete resume to Dr. Stuart J. Travis, Head, Department of Computer Information Systems, Ferris State College, Big Rapids, MI 49307.**

AN AFFIRMATIVE ACTION EQUAL OPPORTUNITY EMPLOYER

DATA PROCESSING PROFESSIONALS

SUNBELT &

NATIONWIDE OPPORTUNITIES

$20-40,000

IMMEDIATE OPENINGS

M-o-r-t-u-n-e

Personnel Consultants of Charlotte, Inc.
(704) 527-5810
8 Woodlawn Green, Suite 133C
Charlotte, N.C. 28210

CONFIDENTIALITY ASSURED

SOFTWARE MARKETING

Independent Sales Rep. wanted to sell new proprietary software to IBM/PCM OS & DOS users. Excellent sales commission - potential in excess of 80K/year. Territories open nationally and Canada.
Contact **R.L. Johnson, Box 5574, San Mateo, Ca. 94402**

Tulsa Opportunity
COBOL Programmers
$25 - $33K

Come to the Sunbelt where the opportunity is. Need three COBOL Programmers with ten years experience. Strong COBOL and IBM background. 20% raise after six months. Professional image, able to work with clients. Contact Lee Cook.

ROBERT HALF
OF OKLAHOMA, INC.
5940 So. Memorial Dr.
Suite 217
Tulsa, OK 74145
(918) 627-1600

FREE

EDP PROFESSIONALS
1982 National Salary Survey...plus
Philadelphia EDP Survey

IF you have at least one year of experience in data processing and wish to know how your salary compares with others in the field.

SEND FOR YOUR FREE COPY TODAY

IF you are interested in changing positions in the data processing profession and curious about salaries elsewhere.

CALL FOR YOUR FREE COPY TODAY

Our national salary survey, one of the most respected in the field since 1950, is used by the US Department of Labor and frequently quoted in newspapers and magazines. Take this complimentary opportunity to find out about exciting career possibilities and salary statistics in both our NATIONAL and PHILADELPHIA surveys. All inquiries are **completely confidential.**

MAIL TO: **ROBERT HALF** OF PHILADELPHIA, INC.
2000 Market Street, Suite 706
Philadelphia, PA 19103

OR CALL: Regina Nordeman at 215-568-4550

NAME _____

ADDRESS _____

HOME PHONE _____ WORK PHONE _____

POSITION _____ National Survey ☐

CURRENT SALARY _____ Philadelphia Survey ☐

COMPUTER PROGRAMMER
NAPA VALLEY, CALIF.

The Robert Mondavi Winery has an immediate opening for a computer programmer to assist in the designing, testing, coding, & implementing of computer programs in an IBM System 34. Ideal candidates should have previous programming experience, knowledge of RPG II, O.C.L., D.F.U. & basic accounting abilities. Qualified applicants, send resume & salary history to: Personnel Dept.
ROBERT MONDAVI WINERY
P.O. Box 106
Oakville, CA 94562

Programmers/ Systems Analysts

When EDP jobs are numerous, confusion frequently clouds your selection process. Why not let CAREER SPECIALISTS of New England, a professional placement agency, help you sort out your choices? Please send your resume to: **CAREER SPECIALISTS OF NEW ENGLAND, INC.,** P. O. Box 1084 -26 Chapel Street, Portsmouth, NH 03801. (603) 436-2225. Our nationwide client companies pay our fees.

COMPUTER PROGRAMMER

CURRENT, INC. (Locart Press), a leading national manufacturer of greeting cards and fine stationery items, is seeking a Computer Programmer for its Systems Services Department.

This position will be responsible for optimal transition of systems specifications into application code, design, coding and testing of computer programs for interactive and batch applications.

The ideal candidate should have a Bachelor's Degree in Business, Accounting, Computer Science, Math or equivalent in experience/training or three years experience, two of which should have been in programming using COBOL.

We offer a competitive package that includes medical, dental, life insurance, car insurance and full education reimbursement. If you would be interested in joining the over 900 people who call Current, Inc. their home, forward resume, salary history and requirements to:

CURRENT, INC.
Attn: Sam Sargent
2635 N. Stone, Dept. C3 Colorado Springs, CO 80907

Equal Opportunity Employer

DATA BASE SUPERVISOR
Riverside, California

BA in Computer Science or related field. Three years systems design programming experience. Additional experience may substitute for two years of the required degree. Knowledge of Burroughs, DMS II, ALGOL, CANDY, and COBOL. Salary $27,276 - $34,824 annually. Apply by February 17, 1982.

Riverside County
Superintendent of Schools
3939 13th Street
Riverside, CA 92502
(714) 788-6666

An Equal Opportunity/Affirmative Action Employer

CLASSIFIED ADVERTISING ORDER FORM
Computerworld's Classifieds work.

Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Turnkey Systems and Real Estate.)

Copy: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines.

Cost: Our rates are $97.30 per column inch. (A column is 2" wide.) Minimum size is two column inches (2" wide by 2" deep) and costs $194.60 per insertion. Extra space is available in half-inch increments and costs $48.65. Box numbers are $10.00 extra.

Billing: If you're a first-time advertiser, (or if you have not established an account with us.) WE MUST HAVE YOUR PAYMENT IN ADVANCE.

Ad size desired: _____ columns wide by _____ inches deep.

Issue Date(s): _____

Section: _____

Signature: _____

Name: _____

Company: _____ Title: _____

Address: _____

Telephone: _____

Send this form to:
CLASSIFIED ADVERTISING, COMPUTERWORLD
375 Cochituate Road, Box 880, Framingham, MA 01701

PROGRAMMER/ ANALYSTS

Professional software services in Frankfort, Kentucky.

Genasys Corporation is a Washington, D.C. area based multi-division organization with a 13 year track record of providing broad-based software services to Federal, State, and local governments as well as commercial clients.

A number of new opportunities on the Genasys software support staff are now available on site in Frankfort, Kentucky.

Applicants should have at least 1 year of work experience in these areas:

Hardware: IBM 370, 3033 in an MVS environment or IBM 3850 MASS Storage System.

Software: COBOL, IMS, DB/DC, VSAM, SPF.

Applications: Medicaid Claims Processing, MIS Reporting, Human Resources, Transportation, Education, Energy, Justice, and others.

Benefits include 3 weeks paid vacation, tuition reimbursement, health/life insurance and profit sharing retirement program. Salaries are competitive.

Mail your resume in strict confidence to Eva Franklin, Director of Personnel or call collect (301) 770-4600.

genasys CORPORATION

11300 Rockville Pike, Rockville, MD 20852

An Equal Opportunity Employer M/F/H

Data Communications Sales And Marketing Professionals

Let The Leader Help You Grow!

Northern Telecom Inc., Spectron Division, the leader in Network Management Systems and DATASCOPE diagnostic devices, is expanding its national sales and marketing support force in response to rapidly expanding marketing opportunities.

Major Expansion of Marketing and Field Sales Activities

MANAGER, SYSTEMS SALES SUPPORT - If you have 10 years inside sales experience in the data processing industry including direct major account sales support experience, 3 years systems analysis experience and 2 years general management experience, we offer this highly visible position with an excellent salary and comprehensive benefits package. Duties include coordination of all phases of major account management: tarketing accounts, proposal presentation and preparation, and account follow-up.

MANAGER, DIAGNOSTIC PRODUCT LINE - If you have 3 to 5 years user experience in the teleprocessing environment, direct experience in customer support, and in the use of data communications network diagnostic equipment and have participated in the product planning of network diagnostic products (competitive analysis, market research, etc.), we offer a challenging career with an excellent salary and benefits package. This position is totally responsible for the diagnostic product line at Spectron.

SALES ENGINEER - If you have a 2 or 4 year degree in computer science, business administration, engineering or equivalent and 2 to 5 years experience selling data communications systems to all levels of management, we offer a challenging career, high earning potential, and a comprehensive benefits package. We have opportunities in:

- Pacific Northwest
- Southern California
- Washington, D.C.
- Mid Atlantic (Western PA, MO, VA)

SYSTEMS ENGINEER - If you have a 2 or 4 year degree in computer science, engineering or equivalent, and 2 to 5 years experience in pre-sales and post-sales technical support, we offer a challenging career, high earnings potential and a comprehensive benefits package. We have opportunities in:

- Washington, D.C.
- Mid Atlantic (Western PA, Maryland, Virginia)
- San Francisco Bay area

Interested and qualified candidates, please send resume and salary history in confidence to:

Human Resources Department

Northern Telecom Inc.
Spectron Division
344 New Albany Road
Moorestown, N.J. 08057

WE HIRE TALENT

nt northern telecom

An equal opportunity employer

Senior Planning Analyst

Billion dollar electric utility holding company with centralized data center has an opening for a Sr. Planning Analyst within the Information Services Planning Section.

The position requires a person with good oral and written communication skills plus 5 years programming, systems analysis, or other EDP experience.

Responsibilities include development of planning procedures, preparation of major planning documents and assisting in the preparation of specific plans related to the various Information Services functions.

Mail resume and salary history to the Employee Relations Department. Principals only, please.

Central and South West Corporation

2700 One Main Place • Dallas, Texas 75250

Equal Opportunity Employer

DALLAS

DATABASE ANALYST

Lending company in the oil & gas industry looking for an individual with IMS data base design experience. TO: $39,000

SYSTEMS PROGRAMMER

Major upgrades and expansion of this leading firms software department has created the need for a CICS and OS systems programmer. TO: $35,000

PROGRAMMER ANALYST

Creation of a new corporate data center has opened up several positions for individuals with IBM DOS/VSE JCL and COBOL programming ability. CICS is desired. TO:$27,100

CONTACT: John Steiger

ROBERT HALF OF DALLAS, INC (214)363-3300
Two NorthPark East Suite #750
Dallas, Texas 75231

DARTMOUTH COLLEGE

ADMINISTRATIVE DATA PROCESSING

Project Leader and Programming Opportunities

Dartmouth College is expanding its Administrative Data Processing Division. We are looking for a Project Leader, and Programmers with all levels of experience.

Data processing at Dartmouth is all on-line using distributed minicomputers and a large time sharing system. The principal programming languages are COBOL, PL/1 and Basic. Experience with distributed processing, database management, or on Prime computers would be a plus.

Dartmouth offers excellent benefits. The Hanover area is an ideal place to live for those who like the outdoors and four seasons. The cultural opportunities are exceptional. For more information, call or write **Roland E. Peixotto, Director of Administrative Data Processing, Kiewit Computation Center, Hanover, NH 03755. (603)646-3801.** Closing date for applications is February 24, 1982.

An Equal Opportunity/Affirmative Action Employer M/F

Software Professionals
NCR Offers A Unique Fringe Benefit: SAN DIEGO

San Diego is the capital of the active life. It's amazing how wide a range of housing options still remain, considering that the weather is ideal for a year-round pursuit of outdoor recreation. And NCR Systems Engineering —Scripps Ranch, affords you an active career as well. The Systems Developer who thrives on research, design and development challenges in electronic data processing systems can find an environment here to grow and succeed. In short, the following opportunities at NCR can fulfill your life, both during the week and on the weekend as well.

Communication And Tools Developers

Perform design, development, specification, test and support of software components. Several areas involve communications management software, terminal and network interfaces, and PASCAL-based compiler enhancements. BSCS degree plus 3-7 years software development experience in tools, compilers, data communication and high-level block structured languages.

Systems and Applications Programmer Analysts

Use latest concepts in software and systems evaluation to conduct product test definition, product specification and quality evaluation. Involves interactive business operating systems; CODASYL and TOTAL Data Base Management Systems; Software and systems quality assurance; and systems communication. BSCS plus 3 years experience and knowledge of user environments required.

Software Integration Analysts/Programmers

Perform functional specification review, test bed development, results monitoring and evaluation, and microcode integration. Develop tools for software/firmware source object control systems. One project leader position. BSCS plus 2-5 years experience with assembly language programming, PASCAL/COBOL, microcode, and some application programming.

Interactive Systems Architects

Be a technical contributor in a senior level group tasked with defining the architecture for advanced transactional and interactive processing systems. Key areas include OS Kernel, performance modeling and VLSI based hardware in small to medium systems. BSCS/advanced degree preferred plus minimum 10 years business system experience.

Data Base Systems Developers

Design and implement advanced network data base management systems. BSCS/MSCS degree preferred with systems programming experience in high level languages, especially PASCAL, and experience in relational, CODASYL or hierarchical data base systems.

Performance Measurement Analysts

Create and develop performance monitors and synthetic benchmarks; measure and analyze software systems performance. BSCS/BSEE and 1-3 years operating systems development experience required, plus performance measurement background preferred.

Firmware Systems Analysts

Design and implement firmware for next generation distributed/processing systems; includes work in micro programming, virtual machine emulation, I/O processor, system console firmware and VLSI-based systems. BSCS degree plus 1-3 years firmware design experience; assembly language programming and PASCAL required.

Testware Development Analysts

Develop testware involving diagnostic programs for mainframes and peripherals; write dedicated drivers and concurrent peripheral diagnostics. BSCS degree with 5 years experience; knowledge of assembly language, PASCAL, microcode, and some COBOL highly desirable.

The choice is yours. San Diego's appeal to both family and singles lifestyles, and the wealth of recreation, coupled with NCR Systems Engineering's dynamic career challenges, make up a package you should look into. Put some enjoyment back into your life. Apply for the position of your choice by sending your resume to:

Mr. Doug Sjoberg, Personnel Resources, Systems Engineering - Scripps Ranch, Dept. L55, NCR Corporation, 9900 Old Grove Road, San Diego, CA 92131. (714) 286-5372.

NCR
Complete Computer Systems

An Equal Opportunity Employer

Data Processing Faculty Position

Instructor or Assistant Professor of Data Processing beginning August 30, 1982. Applicant must primarily demonstrate exemplary teaching skills. Should have strong knowledge and background in COBOL and BAL. Knowledge of RPG, IBM 370 machine language, teleprocessing, business systems, and database management desirable. Business programming experience preferred. Bachelors Degree required; Masters Degree preferred. Involves day and evening teaching. Send letter of application and vita to **Miss Joyce Mirman, Business And Office Technology Division, The University Of Akron, Akron, OH 44325** Application deadline is March 1, 1982. The University Of Akron is an Equal Opportunity-Affirmative Action Employer

ACP COVERAGE PROGRAMMER

Consultant-Long Term contract

High Rates

Send resume to:

Computer Software Consultants
1100 17th Street N.W., Ste. 1000
Washington, DC 20036
(703) 751-6136
(202) 466-2938

COMPUTERWORLD CLASSIFIEDS WORK!

- POSITION ANNOUNCEMENTS
- TIME & SERVICES
- BUSINESS OPPORTUNITIES
- SEMINARS/CONFERENCES
- BUY SELL SWAP
- SOFTWARE
- REAL ESTATE
- SOFTWARE WANTED
- BIDS AND PROPOSALS

It's easy to advertise in COMPUTERWORLD. If you don't have an advertising agency to supply us with copy, layout and order, or camera ready mechanical, stat or film negative of your ad, just call one of our ad-takers at 1-800-343-6474. They will be glad to take your ad and typeset it in available fonts at no extra charge. If you have lengthy ads that require logos and artwork, just send a clean typewritten copy of your ad to the classified advertising department at COMPUTERWORLD (telecopier service is available); note the ad size you want; and, if you want your company logo to appear in your ad, please be sure to include a camera-ready copy with your insertion order. You should also supply any special borders, headlines and artwork that you want in your ad. Our Art Department will follow your suggested layout as closely as possible if you wish to send one.

Rates: Open rate is $97.30 per column inch. Columns are 2" wide. Minimum ad size is 2 column inches (1 column wide by 2 inches deep), and costs $194.60 per insertion. Additional space is available in half inch increments. Some sample sizes and costs are shown.

1 col X 4" - 389.20
2 cols X 4" - 778.40
2 cols X 5" - 973.00
2 cols X 8" - 1556.80

Discounts are available when you run more than 35 column inches of advertising in a year anywhere in Computerworld. Box Numbers are available, $10 per insertion.

Ad closing is every Friday, 6 working days prior to issue date.

To reserve space for your ad, or if you'd like more information on Classified advertising in COMPUTERWORLD, call our office nearest you.

Boston - (617)879-0700 **New York - (201)967-1350**
Chicago - (312)827-4433 **San Francisco - (415)421-7330**
Los Angeles - (714)556-6480

William J. Mills, Manager Classified Advertising

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

COMPUTER

CAD/CAM

Looking for large-scale growth? Our large-scale projects will provide it.

We're expanding our CAD/CAM computer network to support and integrate the activities of 20,000 design, engineering and production personnel... and meet the needs of Naval/commercial contracts with values up to $1.2 billion.

That means outstanding growth opportunities for software application developers with at least 2 years experience in one or more of the following areas:

- Interactive graphics for drafting, engineering and 3-D modeling
- CAD/CAM support for NC manufacturing and robotics
- CAD/CAM computer network D&D
- CAD/CAM integrated database D&D
- CAD/CAM systems development management

Responsibilities: systems design, programming on IBM 4341 and PRIME 750 computers, technological evaluations, HW/SW system integration, interactive graphics systems such as CADAM and AD2000.

Our major systems engineering and manufacturing facility is located in an attractive East Coast community. We provide excellent salary, comprehensive benefits and moving expenses.

To learn more, send resume and salary requirements in confidence to:

CW-A3183
Computerworld
Box 880
Framingham, MA 01701

An Equal Opportunity Employer, M/F

We're Only As Good As Our Support.

The hard work and dedication of the talented technical support people at Nixdorf Computer Software Company, Richmond, Virginia, — from many disciplines — has helped us become a leader in operating systems development.

So we look to hire — and keep — the best in technical support by offering what it takes: excellent salaries, benefits and working conditions. And it's all backed by Nixdorf Computer's international reputation.

Our simple philosophy: Challenged and happy people produce the best work.

At NCSC, we're firmly committed to state-of-the-art technological excellence — placing us on the Datapro software honor roll for 3 consecutive years. So your talent will be challenged and stimulated to grow and mature. Our creative environment, professional attitude and friendly atmosphere blend to provide a truly enriching career experience.

Current Opportunities at our Richmond, Virginia Facility:

For these positions you should have a familiarity with IBM DOS, DOS/VS, DOS/VSE or EDOS operating systems and be proficient in Assembly language programming.

Software Support Representative.

Provide customer support for Nixdorf operating system software. Customer contact and trouble-shooting experience essential.

Support Systems Programmer.

Provide enhancement and program fixes to our operating systems products.

Technical Instructor.

Conduct in-house and customer education for our operating system products; travel involved. Instruction proficiency essential.

Technical Writer.

Provide internal documentation for our operating systems products. We seek a professional whose talents combine systems programming experience with strong technical writing skills.

Internal Systems Support Programmers.

You will be responsible for systems programming of in-house operating systems in support of development projects. Your background should include 3-5 years experience in DOS/DOS-VS operating systems, assembly language skills as well as VM and CICS experience.

If you're interested in one of these opportunities, please forward your resume, including salary history to:

Technical Recruiter, Nixdorf Computer Software Company, 6517 Everglades Drive, Richmond, VA 23225.

Or call — Outside of Virginia — TOLL FREE 800-446-9900. In Virginia, 804-276-9200.

We are an equal opportunity employer m/f/h.

Committed to Success.

NIXDORF COMPUTER SOFTWARE COMPANY

NIXDORF COMPUTER

SENIOR PROGRAMMER/ ANALYST

Professional growth-oriented individual needed to work on a small team developing manufacturing systems.

Applicants should have minimum 4 years hands-on experience in designing, coding and implementing applications software. The following additional qualifications are required:

- BS degree in Math, Computer Science or related field
- Good communications skills including demonstrated ability to work effectively with user groups.
- 2-3 years experience with applications software development tools such as interactive debugging aids, editors, report writers, screen and file handlers, etc.
- Manufacturing systems experience

We offer competitive salary and excellent benefit package including relocation assistance and profit sharing. Send resume including salary requirements to:

Personnel Manager

Rexham CORP.

P.O. Box 35068
Charlotte, NC 28235
An Equal Opportunity Employer M/F

HARRIS-VULCAN-COBOL

If you have extensive experience in all the above we would like to talk to you about joining us as Site Manager.

You should be able to step in on day one and operate the system effectively.

Please send your resume and salary requirements in confidence to:

Perry W. Sears
Secretary, Treasurer
Robinson, Inc.
P.O. Box 7725
Orlando, FL 32854

We are an equal Opportunity Employer

SOFTWARE SYSTEMS COORDINATOR

San Diego City Schools
$28,188 to $34,260 annually
* Career Position
* Excellent Benefit Package includes 4 week paid annual vacation

San Diego City Schools has a management team vacancy for the person with progressively responsible experience in the generation and maintenance of OS/VS1 or MVS operating systems. Experience in VM/SP, VSAM, DATA BASE, and CICS/VS is desirable.

Submit detailed resume immediately to: San Diego City Schools, 4100 Normal Street, San Diego, CA 92103. (714) 293-8152.

Qualified candidates will be contacted at once to schedule interviews.

EQUAL OPPORTUNITY EMPLOYER

COMPUTER SPECIALISTS

IBM 4341 Series

SOFTWARE ENGINEER - Maintenance and generation of IBM software products and operating environment on IBM 4341 with OS/VS 1. Requires 1 yr experience and B.S. degree or completion of EDP business school.

SYSTEMS ANALYST - Specialize in financial projects related to manufacturing environment. Requires COBOL experience and background in business accounting environment. Prefer B.S. degree, but will consider EDP business school graduate.

Funk Manufacturing, a division of Cooper Industries, offers a top salary plus bonus plan, excellent benefits package, paid moving expenses and relocation assistance.

For immediate consideration, please call or write:

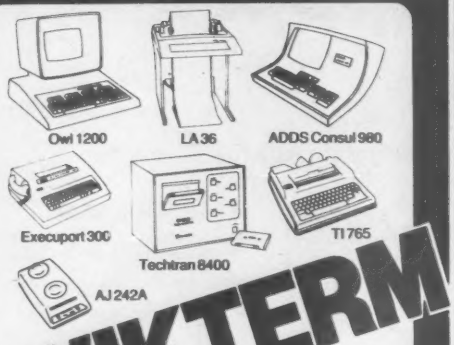
COOPER INDUSTRIES

Brad Buckner
Manager of Employee Relations
FUNK MANUFACTURING COMPANY
Industrial Park
Gaffeyville, KS 67377
316/251-3400 x507

An Equal Opportunity Employer

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

BUY SELL SWAP



QWIKTERM

Fully reconditioned. Limited quantities available.

TI 765 — Bubble memory $1700.
LA 36 — DECwriter II $595. plus options
Perkin Elmer Owl 1200 — CRT $995.
Techtran 8400 — Cassette Recorder $250.
AJ 242A — Acoustic Coupler $150.
ADDS Consul 980 — CRT $495.
Execuport 300 — Portable $495.

If you have terminals that are no longer in use or are outdated, call us. We can either buy them from you or take them in on trade to update your system. Short or long term leases on both new and reconditioned terminals, or outright purchases. Call us for information.

Boston (617) 246-1665	Chicago (312) 595-7733	New York (212) 564-7731
Wash., D.C. (703) 522-1210	San Francisco (415) 461-0823	Los Angeles (714) 521-7160

IBM FINANCIAL TERMINALS

NEW

3604-4's
3604-6's

IN STOCK NOW;
3601's 3610's
3603's 3612's

3274's
3278's
3279's
3287's

IN STOCK
IBM NEW
ITC QUALIFIED

3776-2's
3777-1's
3777-2's
3777-3's

with

3203's 3782's
2502's 3521's

AVAILABLE NOW

3704-A1's
3705-E1
3705-E6

AVAILABLE NOW

3370's
A1's & B1's
New & Used
Available Now

Lord's Financial Inc.
P.O. Box 249
Roswell, GA 30077
404/998-1001
Call: Pat

DEC TERMINALS

BRAND NEW • FULL 90 DAY WARRANTY • BRAND NEW • WARRANTY • BRAND

VT101-AA	*NEW*	$995
VT131-AA	*NEW* EIA, Blk, Mode, Editing	$1,575
VT100-AA	EIA	$1,375
LA34-DA	EIA	825
LA34-AA	EIA w/Forms	875
LA34-RA	EIA, Receive Only	850
LA38-GA	EIA, KP, & Tractor	1,000
LA38-HA	EIA ,KP ,Tractor ,Stand	1,100
LA38-AA	EIA, KP, Forms, Tractor Stand	1,150
LA120-RA	EIA, Receive Only	1,795
LA120-AA	EIA, KSR, Keyboard only	1,995
LA120-BA	EIA, Keyboard & Keypad, KSR	2,075

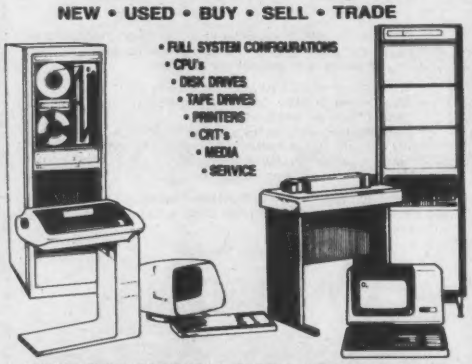
Quantity One Cash Prices*
Call Sonja at (614) 889-0810

SCHERER'S MINI COMPUTER MART
6145 Dolan Place - Dublin, OH. 43017

BRAND NEW * WARRANTY

DG • DEC and Compatibles

NEW • USED • BUY • SELL • TRADE



"YOUR FIRST CHOICE IN A SECOND SOURCE MARKET"

WE HAVE IT IN STOCK

• NOVA 3 10 MB SYSTEM	FROM $10,000	• DEC 11/34 RL 02 SYSTEM	FROM $10,000
• NOVA 4 20 MB SYSTEM	FROM $20,000	• DEC 11/44 RM 02 SYSTEM	FROM $40,000
• ECLIPSE C/300 96 MB SYSTEM	FROM $40,000	• DEC 11/70 RP 06 SYSTEM	FROM $60,000
• LARGE DG SYSTEMS C/350 M/600 MV/8000	On Request	• LARGE VAX 750/780 SYSTEMS	On Request

HUNDREDS OF DG & DEC MODULES & OPTIONS IN INVENTORY

CRC
COMPUTER RESALE CONSULTING INC.
Specializing In Data General® & DEC® Systems & Upgrades
COMPUTER REPAIR CENTER INC.
Full Service Depot Repair & Field Service
COMPUTER RECYCLING CENTER INC.
Specializing In Obsolete Computers & Components

OFFICES LOCATED AT 486 W. MAIN ST., AVON MA 02322
TEL. 617-583-8488 — 1-800-343-1552 — TWX/TELEX 710-345-1250

*Registered trademark of Data General & DEC Corporations

call GEORGE H. TRAWINSKI

DEC VALUES

11/70 Core Memory, MJ 11 BE-BA
11/44 MOS Memory 256KB, MS11-MB
11/34 Cache Memory, KK11-A
11/70 CPU, ½ Megabyte
PDP-11 Network Link, DMC-11 (Local or Remote)
TU 10/TMA-11
176MB Disk Drive, RP06-AA
Unibus Controller, RH-11
PDP-11 8 Line Mux, 20 MA DZ11-C
11/60 MOS Memory 64KB, MS11-KE
PDP-11 Sync Interface, EIA, DU11-DA
PDP-11 16 Line Programmable MUX, DH11-AD

NATIONAL COMPUTER EXCHANGE

800-854-7224

6980 Aragon Circle, Suite 5 • Buena Park, CA 90620

(In Calif.) 714-522-1870 TWX:910-596-1499

3851/ 3830-3

Available Now
Lease or Sale
312/698-3000
Call Bob Bardagy
Or Your
Local Comdisco Office

COMDISCO

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

Buy • Sell • Lease

Series/1

- Extensive Inventory
- Features Sold Separately
- In-house Engineers
- Over 200 Installations

3101's Now!

COMPUTER OPTIONS, INC.
The Best Option in IBM Computers

612 • 544 • 8660
800 • 328 • 5718

Buy • Sell

S/38
S/34
S/32
S/23
5110/20

Leasing Available

COMPUTER OPTIONS, INC.
1660 So. Highway 100 #428W
Minneapolis, MN 55416

612 • 544 • 8660
800 • 328 • 5718

Specials of the week

Machine	Qty.	Price
5251-12	(2)	$4700
5256-003	(3)	$3900
2500/3701	(2)	$2200
4952-B00	(1)	$4600
4979-001	(10)	$1650
3101-12 (new)	(12)	$1400
3101-23 (new)	(20)	$1480
3742-002	(1)	$2650

COMPUTER OPTIONS, INC.

612 • 544 • 8660
800 • 328 • 5718

COMDISCO®

Your First Choice ☑ In The Second Market

IBM PROCESSORS

- ☐ 3081 Available Throughout 1982 Will Lease/Finance Yours Or Ours
- ☐ 3033 New/Used Available On 30-90 Days Notice
- ☐ 3032 Available Throughout 1982
- ☐ 3031 Available Now 18-24 Month Leases
- ☐ 4341 Group I & II Available Now
- ☐ 4331 Group I & II Available 30-60 Days
- ☐ 3168 All Sizes Available 12-18 Month Leases
- ☐ 3158 All Sizes Available 6-12 Month Leases
- ☐ 3148 Immediately Available On Month-to-Month
- ☐ 3138 Immediately Available On Month-to-Month
- ☐ Amdahl V6-II - Available On 30-60 Days Notice

IBM PERIPHERALS

- ☐ 3880/3830 Immediate Availability
- ☐ 3350/3370 Immediate Availability
- ☐ 3375/3380 As Available
- ☐ 3333/3330 All Models For Sale or Lease
- ☐ 3340/44 All Models For Sale or Lease
- ☐ 3803/3420 All Models For Sale or Lease

MISCELLANEOUS

- ☐ Memory/Channels — Immediate Availability
- ☐ 3705/04 — Call Karen Johns 312/698-3000
- ☐ 327X CRT's — Call John Christopher 312/698-3000

We Can Put It Together

Eastern Regional Headquarters	
(Connecticut)	203-655-1211
Boston	617-542-4005
New Jersey	201-568-9666
Midwestern Regional Headquarters	
(Chicago)	312-698-3000
Michigan	313-644-1500
Western Regional Headquarters	
(San Francisco)	415-944-1111
South Central Regional Headquarters	
(Dallas)	214-258-6444
Fort Worth	817-534-1774
Atlanta	404-256-5956
Florida	305-428-3177
Canadian Regional Headquarters	
(Toronto)	416-968-7135
International Headquarters	
(Chicago)	312-698-3000
Latin America	305-666-6258
Paris	(1)297.0180
Switzerland	(21)71.09.35
West Germany	(2434) 5048
Corporate Headquarters	
6400 Shafer Court	312-698-3000
Rosemont, IL 60018	TWX 910-253-1233

A MEMBER OF CDLA AND LISTED ON THE NEW YORK STOCK EXCHANGE

DEC

- We Buy & Sell DEC Systems
- Wide Range of DEC Options, Peripherals, etc.
- Immediate Delivery on In-Stock Equipment
- Low Prices
- Guaranteed for DEC Maintenance

CALL TODAY (612) 894-4020

(MSI) MIDWEST SYSTEMS, INC.
1118 East Highway 13, Burnsville, Minnesota 55337

Dearborn Giveth Attractive Lease Rates Available

Qty.	Machine Type	With Feature	Available
2	2501-B2		Now
5	1403-N1	8640	Now
2	1403-N1	No UCS	Now
2	3803-01		4/1/82
	(Model 2 Upgrades On Order)		
2	3803-01	3551	4/1/82
2	3420-05	3550, 6631	Now
2	3420-07	3550	Now
16	3420-5		4/1/82

(Upgrades To 6 And 8 On Order From Model 5)
We do purchase leasebacks of any installed IBM equipment

Call Earl Jacobson (312) 827-9200

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

Available Immediately

Terms negotiable
Brokers welcome

IBM

370/158 Model 1 6 meg	Sale/Lease
370/158 AP Model 1 6 meg	Lease
3420-6 Tape 1600/6250	Sale
3420-5 Tape Dual Density	Sale
2501 Card Reader	Sale
3800	Sale/Lease
3211/3811	Sale/Lease
3830	Sale
3350 A2 and A2F Disk Controller	Sale
3350 B2 and A2F Disk Drives	Sale
3333 Model 11 Disk Controller	Sale
3330 Model 11 Disk Drives	Sale

Kodak Komstar Micro-Film Processor	Sale/Lease
Kodak Micro-Film Copier	Sale/Lease

On-Line Business Systems, Inc.
115 Sansome Street
San Francisco, California 94104
415-391-9555
Ask for Don Eichler

BURROUGHS
L9000
Meg. Ledger Computer
For Sale
Bill Joyce
Makepeace Inc.
(617)267-2700
Ext. 241

---

for sale
TANDEM
NonStop
Computer System
2 Processor System
1 Megabyte Memory
2 Disk Drives
Tape Drive
Printer
includes Tandem
Software licenses
Under Tandem maintenance
Available immediately
(415) 276-2560

For Sale
Or Lease
IBM 3350 B2's
Available
Immediately
TGIF
(214) 341-6995

BROOKVALE
DEC

LEASE•SELL•RENT•UPGRADE

PDP 8, 11/03, 11/04, 11/23, 11/24, 11/34,
11/44, 11/45, 11/60, 11/70, VAX/750, VAX/780

SYSTEMS•OPTIONS•SUPPLIES

11/780	1MB MOS, RM05, (256Mb Dr/Control), TU77, VAX/VMS
11/70	512Kb MOS, RWP06, (176Mb Dr/Control), LA120, RSTS/E lic.
11/44	256Kb MOS, dual RL02(10Mb drives), FP11, LA120, RSX11 lic.
11/34	256Kb MOS, dual RK07 (28Mb drives), LA120, RSX11 lic.
11/23	128Kb MOS, RXV21 (1Mb dual floppy), VT100, RT11 lic.

BROOKVALE ASSOCIATES
(800) 645-1167 • NEW YORK (516) 567-7777
40 ORVILLE DRIVE • BOHEMIA, NEW YORK 11716

IBM SYSTEM / 34

BUY-SELL-PURCHASE LEASE/BACK
A PHONE CALL CAN SOLVE YOUR PROBLEM
TALK TO US: (201) 343-4554

WILLIAM MARION COMPANY, INC.
P.O. BOX 309, HACKENSACK, N.J. 07602

FOR SALE
IBM System 3
Model 15D
5415-D24-256K
BSCA attachment, 1442 attachment,
3411 attachment, 3741 attachment
1403 Printer, 600 LPM 5421
control unit
3340 disk drive
(6) 3277's display stations
$20,000
Available 4/1/82
Contact:
Kevin Wrenn
Gries Dynacast
(914) 633-8600

For Sale
Used NCR Equipment
Available Immediately
NCR 785-101 Wand Readers
Available In June
NCR 280-110 Terminals
NCR 723 Data Collectors
Contact John Apessos
Best Products
Company, Inc.
PO Box 26303
Richmond, VA 23260
(804) 261-2019

Large Scale Computer
IBM 3033 - N08
- Serial No. 5182058 -
1st Installation October 80
Superior Performance and Liability
For Sale or Lease in Aug/Sept 82 Because of 3081.
Please Contact Directly the Owner:
ACL-ABACUS COMPUTER LEASING GMBH
Airport, Building 131, D-6000 Frankfurt Am Main 75, 315 & 34.-,6
Telephone: (area code) 611/690-4610 or 4655, TLX: 413 799
Possibly as a Package Deal Incl. IBM 3350/3375 Disks

SHORT OR LONG TERM LEASES
Randolph
3081's, 303X, 4300's
and all 370 CPU's and peripherals
800 243-5307
Randolph Computer Company
Division of The Bank of Boston
537 Steamboat Rd.
Greenwich, CT 06830
203 661-2009
MLA

AVAILABLE
3033-U16 NOW
3370's NEW NOW
SCG
LEASE • BUY • SELL
Stamford Computer Group, Inc.
(203) 324-9495
200 Broad Street
Stamford, CT 06901

3270's AVAILABLE FOR SALE OR LEASE

3274 CONTROL UNITS
3276 CONTROL UNIT DISPLAY STATIONS
3278 DISPLAY STATIONS
3279 COLOR DISPLAY STATIONS
3287 PRINTERS
3287-C COLOR PRINTERS
3230 PRINTERS

We Specialize in Quick Delivery

NF COMPUTER SALES & LEASING CORP.
1211 W. 22nd St. SUITE 424, OAK BROOK, IL 60521
Tel. 312-920-8181 Telex 206106 NFC OAKB
MLA

DATA GENERAL
MV/8000
1.5 MB SYSTEM,
STILL IN CRATES,
IMMEDIATE
DELIVERY,
WARRANTY
20% BELOW LIST.
303-759-5937

FOR SALE OR LEASE:
- IBM 3033-N8 w/3851 Serial No. 21269 4/10/82
- IBM 4331-J1 w/1421, 3201, 4910 7851, Serial No. 10686 2/15/82
- IBM 8809, (1) 3340-A2 (2) 3340-B2 2/15/82
- IBM 3168-K w/(1) 2870, (1) 2860-1 (1) 2860-2, Serial No. 60022 4/15/82
- IBM 3350-A2F and B2F, Serial Nos. 21156, 43044 3/1/82
- IBM 370/158K, Serial Nos. 23895,
- MRX 6358 Memory 8MB Serial No. 31079
- IBM 3052 and 3056, Serial Nos. 20252, 22344 with a series upgrade 2/15/82

MUNICIPAL LEASING CORPORATION
Phil Morton (703) 893-2480

Inflation Fighters

Quality & Savings
Slightly used. Money Back Guarantee. Full Reels. All External Labels Removed Guaranteed for use at 1600 BPI through 6250 BPI.

2400' Reel	$4.95 ea.
1200' Reel	$4.25 ea.
600' Reel	$3.50 ea.

All Tapes with Hanging Seals
We pay freight on orders over 200 tapes
All orders shipped within 48 hours
Call or Write
Computer Tape Mart
169 B New Highway
Amityville, New York 11701
[516] 842-8512

BURROUGHS
TD830 CRT's
B1855 Complete Systems
B4890 CPU
B950 Complete Systems
B9246-20 2000 LPM printer
Complete tape subsystems

DSI
2480 W. Alameda Ave
Denver, Colorado 80223
(303) 922-8331
Telex: 910-931-0483
MLA Member Computer Dealers & Lessors Association

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

CMI

AMERICA'S LEADING SPECIALIST SERVING THE USED MARKET

3081 MODEL D Positions Available February Thru July Financing Available For Your On-Order Positions MODEL K Position Available June

AMDAHL V8 8 x 16 Available March 1, 1982

3032 3850 Extended Channel Lease/Sale Available Now

3033-N8 Sale or Lease Available Now

3033 Memory Upgrades 3850/3851 All Features

SYSTEM 3 Models 12 and 15 Dennis Pennington

3033 Upgrades S to N N to U

3168-A38 with 7730 Purchase or Short Term Lease

30-60 DAY DELIVERY **4341-M2** Sale or Lease Below IBM Rates

4300 Purchase/Lease Back 4321 All Models 4331 All Models 4341 All Models

COMMUNICATIONS IBM 3705 IBM 3704 Immediate Delivery Configured To Your Requirements Pat Ducey **2914** Mary Drangin

SYSTEM 34 SYSTEM 32 Dennis Pennington

3270

3350 3880 3830 3340 3370 3330 3375 Buy/Sell/Lease Pat Callahan Mary Drangin

3203 3505/3525 3800 3211/3811 Mary Drangin **3803/3420** Immediate Delivery Tim Ryan

CMI CORPORATION Since 1969
755 W. Big Beaver, 19th Floor, Troy, Michigan, 48084
TWX/TELEX: 810 232-1667 CMI CORP TRMI
(313) 362-1000

MARKETING
California (408) 773-1640 (415) 956-3183 (714) 752-8443
New Jersey (609) 645-7282
Tennessee (615) 449-6633
Texas (214) 385-0806
Montreal, Quebec (514) 871-1121
Paris, France Telex: 613910 CMI FR
Windsor, Ontario (519) 258-8910

CMI FINANCIAL SERVICES, INC.
755 W. Big Beaver, Troy, Mich. 48084
(313) 362-1000

Member CDLA

IBM
PERSONAL COMPUTERS FOR LEASE
AS LOW AS
$48/MONTH
CALL BETTY WILDMAN
901-767-9130

ECONOCOM
P. O. Box 17825 / 1755 Lynnfield Road
Memphis, Tennessee 38117-0825
CDLA Member Computer Dealers & Lessors Association

DAC DATA AUTOMATION COMPANY, INC.

SERIES 1

- BOUGHT - ANYWHERE - ANY QUANTITY
- Reconfigured and Staged by IBM Trained Technicians
- Refurbed to Exceed IBM Standards
- All Equipment Inspected by IBM
- Sold to Users Nationwide at Substantial Savings

4858 CASH ROAD • DALLAS, TEXAS 75247 • 214-637-6570

CDLA Member Computer Dealers & Lessors Association

DEC*

PDP* 11/44 SYSTEM

For Lease Or Sale
Flexible Terms 1-5 yrs.
12% Equiv. Int. Rate

Custom Configured To Your Specifications

- 11/44 CPU
- 300 MEG DISK SUBSYSTEM
- DZ11A LA120
- RL02 TJE16EA

Our Leases Are Better Than Buying

For More Information on Any DEC Lease, Call

DATALEASE®
800-854-0350
In Calif: 714-632-6986

*DEC & PDP are registered trademarks of Digital Equipment Corp.

DEC
SYSTEMS & COMPONENTS
C.D. SMITH & ASSOCIATES, INC.
12605 E. Freeway, Suite 318
Houston, TX 77015
713-468-2384
TELEX 76-2547 CDSMITH HOU

SYSTEMS • PERIPHERALS • PARTS

DG
Phil Thomas
305/272-2339

DEC
Bryan Eustace
305/272-2338

Jennifer Eustace
TELEX 807-219

BUY - SELL - TRADE - LEASE
THOMAS BUSINESS SYSTEMS, INC.

DATAPOINT FOR LESS!
All Types
Datapoint Equipment
Large Inventory
Call Today
Datasell Corporation
(713) 784-7955

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

Digital Equivalant COMPUTER EXCHANGE

We deliver and support the Best Systems in the World

CHECK OUR SAVINGS

NEW DEC COMPATIBLES

PDP 11/34A
DEC LIST $70,700.00 OUR PR. $38,900

PDP 11/70
DEC LIST $162,800.00 OUR PR. $88,800.00

SUBSYSTEMS

WRJ8802-AA
DEC LIST $32,300.00 OUR PR. $16,000.00

WRJ8805-AA
DEC LIST $46,000.00 OUR PR. $17,800.00

OPTIONS

WDZ11-A
DEC LIST $2700.00 OUR PR. $1,350.00

WDZ11-E
DEC LIST $4,300.00 OUR PR. $2,450.00

WDD11-CK/F
DEC LIST $470.00 OUR PR. $280.00

WDD11-DK/F
DEC LIST $840.00 OUR PR. $600.00

(916) 635-9340

WEX West Coast Computer Exchange, Inc.

Manufacturers: (DEC) equivalents.
Dealer: DEC equipment

11309 FOLSOM BLVD.
RANCHO CORDOVA, CA. 95670

Series/1

BUY–SELL–LEASE
CPU's—4952 & 4955
Disk—4962's/4963's
Printers—4973's/4974's
Displays—3101(Model 23)/ 4978/4979

Features—Most Available

We maintain an inventory of Series/1 Hardware. Most items can be shipped immediately.

CALL ROGER ODOM
901-767-9130

ECONOCOM
P. O. Box 17825 / 1755 Lynnfield Road
Memphis, Tennessee 38117-0825

CMI

AMERICA'S LEADING SPECIALIST SERVING THE USED MARKET!

3032-6
With or Without 3850
50 or 60 Cycle • European Location
AVAILABLE IMMEDIATELY
PRICED BELOW MARKET
Rosemary Martin

TWX/Telex: 810 232-1667 CMI CORP TRMI
CMI CORPORATION (313) 362-1000

DEC EQUIPMENT FOR SALE

DISCS	PROCESSORS	TAPES	MEMORY
RP06-AA	11/70	TE16	MK11
RP06-BA	11/34A	TE10	MS11
RP04	11/40	TU45	MF11
RPR02	11/45	TU70B 50hz	MS780
RM03	OPTIONS	CABINETS	MISC
RM02	FP11	H967	PDT-110
RK05,06,07	KK11-A	H960	LA180
RL01,02	DZ11	BA11	CTS11-KM
	DH11	H9602	LA34-DA

Carl R. Boehme & Assoc., Inc.
Specialists in Digital Engineering
408/727-2666 Telex 172337
See our ad on page 97.

We Buy & Sell DEC Systems Components

Digital Computer Resale
call: 713 440-5845
5527 Pine Arbor
Houston, Tx 77066

FOR SALE • FOR SALE • FOR SALE

12 new PERKIN-ELMER 3220 PROCESSORS
512K memory • 10 I/O ports • 80 MB fixed disk • 1600 bpi tape unit • processor console

12 new CENTRONICS MODEL 720
120 cps printers

12 new MITSUBISHI 13" COLOR CRTs
with keyboards

We have 12 complete PE minicomputer systems with compatible printers and CRTs available as a total package deal or as individual systems or units — any mix!

WE WANT TO DEAL
Talk to Tony Giusti at 609-234-5700, ext. 2306.

nt northern telecom

Spectron Division 113 Gaither Drive Mt. Laurel, NJ 08054

WANTED FOR TOP CASH - USED RAISED COMPUTER FLOORING AND DATA VAULT SAFE CABINETS, ETC.

Phone Toll Free: 1-800-521-7301
Mich: 1-800-572-5018
or (313) 547-6200
or Telex No: 230465 or 6867023-DOSS INC. GBPW,
Attn: G. Crane or M. Sellers

M. SELLARS & ASSOCIATES
1421 Hilton Road
Ferndale, MI 48220

FCR

BUY SELL LEASE
IBM
SYSTEMS 3, 32, 34, 38 and PERIPHERALS
30-Day Availability

5251	5211	5256	3262	1403	3525
3741	3742	3276	3277	3278	3505
3410	3411	3340	3344	029/129	

Buy/Sell Used Decision Data Products

FEDERAL COMPUTER MARKETING, INC.
14001 Goldmark Drive, Suite 237
Dallas, Texas 75240 (214) 690-5187

IBM® PERIPHERALS FOR SYSTEM/3 and 360/370/4300

• FOR LEASE
• FOR SALE

Take advantage of a special situation.

3340	3411	1403-NI
3344	3742	1403-2
3410	3741	3275
	3277	

PCPA/Professional Computer Placement Associates, a combined remarketing organization Members

International Capital Equipment, Inc.
One E. Wacker Dr., Suite 2310
Chicago, IL 60601

Vargo Companies
48945 Van Dyke Ave.
Utica, MI 48087
(313) 254-2850

DataGeneral

If you remember two things:
IMMEDIATE DELIVERY
DISCOUNT PRICES
we're in business!

DATATREND

XRXB COMPUTER SALES

SERIES/1 5110
S/34 S/38 S/3 S/32 S/23

We Buy, Sell and Lease All IBM Products

800-328-3884 612-929-7143
P.O. Box 24010 Minneapolis, MN 55424

DATA GENERAL SPECIALISTS FOR

Surplus New & Used Equipment & Systems with full depot repair facilities.
CALL US
WE TAKE THE TIME.
- WE CARE -

JM Associates
601 W. Chapel Avenue
Cherry Hill, NJ 08002
609-663-1115

IBM DISK

AVAILABLE FOR SALE OR LEASE

3330 3350 3370

NF COMPUTER SALES & LEASING CORP.
1211 W. 22nd St. SUITE 424, OAK BROOK, IL 60521
Tel: 312-920-8181 Telex 206106 NFC OAKR

DATA GENERAL

We Buy, Sell And Service
New And Surplus Systems and Peripherals
Call Or Write

Hanson Data Systems
(outside Mass. toll free) 1-800-225-9216
(within Mass.) (617) 481-3901
P. O. Box 27, Southboro, MA 01772

FOR SALE OR LEASE

IBM 3333/3330 MDL 11 DASD February
IBM 3203/5 March
IBM 3420/4 Tape Drive Now
IBM 3340 A2 with Fixed Head Now.
IBM 3420/6 Tape Drives March

Please Call: (312) 943-3770
Forsythe/McArthur Associates, Inc.
919 North Michigan Ave.
Chicago, Ill. 60611

ALL 360 & 370 SYSTEMS

CPU's & Peripherals
Purchased, Sold & Leased

CORPORATE COMPUTERS, INC.
Contact: Norm Burger

(203) 661-1500
115 Mason St., Greenwich, Conn. 06830
Member Computer Dealers Association

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

BUY • SELL • LEASE

TAPE
3411•3410
3420
DISK
3340•3344
3350
Call Bob Ford
or Nelson Johnson

S/3
ALL MODELS
(8, 10, 12, 15)
S/32
S/34
SERIES/1
Call Gayle Drotar
Roger Odom
Ken Winzen

370 Systems
(Models 115-138)
4331
Call Donna Sage

370 Systems
(Models 145-168)
4341
3031•3032
3033
Call Jack Harvey

Want our capabilities brochure? Send us your business card.

ECONOCOM
1755 Lynnfield Road
P.O. Box 17825
Memphis, Tennessee 38117
901-767-9130

The best of both worlds

IBM and PCM equipment from CIS...the second market source that puts your bottom line first.

Phone 315/425-1900

Processors, peripherals. Buy, sell, lease, trade.

- ☐ **3081** Order Positions Thru 1982 Financing Your Position or Ours
- ☐ **3033** Lease or Purchase Available 30 Days
- ☐ **303X** 3032, 3031 Available 30 Days, 12 to 24 Month Leases
- ☐ **4300s** Purchase Leaseback New/Used
- ☐ **370s** All Models Flexible Terms
- ☐ **Amdahl** V6-II Available 30 to 60 Days
- ☐ **Disk** 3350s, 3330s Immediately Available
- ☐ **3420s** All Models On The Shelf
- ☐ **S/34, S/38** Purchase Leaseback Attractive Terms
- ☐ **Memory, channels I/O** Stock in Inventory

CIS
A publicly held company

Syracuse
600 MONY Plaza
Syracuse, NY 13202
315/425-1900

Dallas, TX
214/931-3380
San Francisco, CA
415/956-3040

Dusseldorf, West Germany
TLX 8586367
Fribourg, Switzerland
TLX 36585

Paris, France
TLX 202714
Brussels, Belgium
TLX 26025

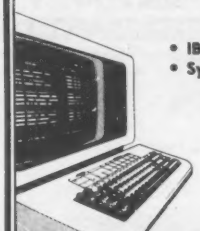
IBM For Less.

Lease Financing

- **New IBM Equipment**
- **Purchase/Leasebacks of Installed Systems**

Equipment

- **IBM 4300's**
- **Systems 38's**
- **System 34's**
- **Peripherals**



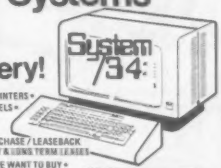
TexCom™
Equipment Leasing Services

Houston 713/789-3843
San Antonio 512/690-9826
Memphis 901/761-9336

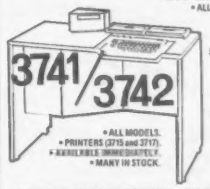
Please Call For A Proposal

We·buy·sell·and lease·IBM Computer Systems

Available for Immediate delivery!



• CPU's • CRT's • PRINTERS • ALL MODELS •



• ALL MODELS • PRINTERS (3715 and 3717) • AVAILABLE IMMEDIATELY • MANY IN STOCK

PURCHASE/LEASEBACK SHORT & LONG TERM LEASES • WE WANT TO BUY • BANKED ON RENTAL CREDIT • IMMEDIATE CASH •

We buy & sell

Pearl EQUIPMENT CO., INC.

PEARL EQUIPMENT COMPANY, INC.
P.O. BOX 24086 • 4717 CENTENNIAL BLVD. • (615) 383-6703 • NASHVILLE, TN 37202

System/38

Leases for less than IBM's MLC.
Short or long term leases available.

We use your on-order system.

CALL: JOHN BOTTOM
(901) 767-9130

ECONOCOM
Leasing Company
P.O. Box 17825 1755 Lynnfield Road
Memphis Tennessee 38117

AVAILABLE IN STOCK

DEC **DEC**

PDP 8 systems and accessories in stock
11/34A CPU's and Systems
11/70 Processors Available
11/23, (2) RL02, LA120, RSTS $25,000
11/23, (2) RL01, VT100, $19,500

DH11-AD	$7250
FP11-A	$3000
KY11-LB	$ 875 New
MS11-LB	$1800 New
MS11-LD	$2700
RX211-BA	$3950
861-C	$ 300

ICS 11-MA industrial control sub-system 50% off list
11/34A, 32KB, M9312, DL11WA, KY11LB $12,300
Several other Peripherals, systems, etc.

SWA South West Automation

1113 Ave B - P.O. Box M, Katy, TX 77449
713/391-9288

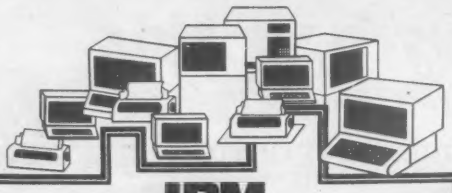
WANTED!

SYSTEM/32 ***SYSTEM/34***

If you have a System/32 or System/34 to sell, we would like to buy it. Since we are dealing on behalf of already committed buyers, we can afford to pay top dollar for your computer.

CONTACT
Mr. William Bell
National Medical Computer Services, Inc.
7578 Trade Street
San Diego Ca. 92121
(714) 566-9920

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap



IBM
SERIES 1 S/32 S/34 S/38
TAPE DISK PERIPHERALS
UNIT RECORD 029-129
5110-5120 3741 3742

Ameritex Computer Corporation

MEMBER ASCD AMERICAN SOCIETY OF COMPUTER DEALERS

214-934-9151
GENE NICHOLL TOM KLEEFISCH
14229 PROTON • DALLAS, TEXAS 75234

IBM PROCESSORS / PERIPHERALS •BUY •SELL •LEASE

SYSTEM •3 •32 •34 •38

SERIES 1

5100	5110	5120
5251	3262	3344	3741
5256	3287	3411	3410
5211	3276	3340	029/129

CCSI
Carlyn Computer Systems, Inc.
5203 Leesburg Pike, Suite 1200
Falls Church, Virginia 22041
Call Collect (703) 820-3754

SPECIAL OFFER TO CLASSIFIED ADVERTISERS IN

COMPUTERWORLD/MEXICO

The Hottest New Newspaper in the Hottest New Computer Market!

Looking for a new market for equipment, services, software or used computers?

Thirty thousand readers of this Mexican newspaper are looking for you.

Come together at $1.50 per agate line on a 5 column page like this one (minium 30 lines/one column).

COMPUTERWORLD/MEXICO
EL PERIODICO PARA LA COMUNIDAD DE LA COMPUTACION
México Asumirá su Capacidad de Comunicaciones
INFORME ESPECIAL

Write or call: Albertina Monjardin
Computerworld/México Oxaca 21-2 México 7, D.F.
Tel: (905) 514-4218, 514-6309. We'll translate your ad for $5.00/page --and set type free.

Independent
wang
Specialists
•WORD PROCESSORS
•COMPUTER SYSTEMS
•PERIPHERALS
•UPGRADES
•COMPATIBLES
BOUGHT & SOLD
CFR Associates, Inc.
18 Granite St. Haverhill, Ma. 01830
617/372-8536

NCR USERS

We deal exclusively in NCR Computer Equipment. If you're buying or selling deal with the nations oldest and largest. Contact Gary E. Zywotko.

(612) 884-0758
Computer Connection Corp.
8120 Penn Ave. South
Minneapolis, MN 55431

For Sale
NCR-8356
64K CPU
4-657 Disk Drives (110 MB)
900/1200 LPM Printer
796-101 CRT (300-9600 Baud)
Console Thermal Printer
7620-Dual Cassette I/O
20-657 Disk Packs
Under NCR Maintenance
Ray Leonard
(802) 658-4100
Pizzagalli Construction Co.
50 Joy Drive
So. Burlington, VT 05401

DEC SYSTEMS

Software support, complete installation

Immediate delivery on
11/780, 11/750, 11/70, 11/44, 11/24, 11/23
New & used disk & tapes
RM05, RP06, RM03, RM02, TS11, TU77
Non DEC peripherals, CDC, Kennedy, Emulex
Terminals and options
VT-100, LA120, DZ11, FP11's, DUP11's

Call (408) 738-3368

IDS International data services
1020 Stewart Drive
Sunnyvale, CA 94086 TWX 172-189

Buy & Sell

TI TERMINALS

810 RO Basic	$1,095
840 KSR Basic	865

- New
- Immediate Delivery
- FOB Dallas

Ask us about our DEC terminals too!

DCI
800/527-5148
In Texas: **214/358-3681**

DG

900 LPM
PRINTER

Phil Thomas
305/272-2339
THOMAS BUSINESS SYSTEMS, INC.

Sale Or Sublease
Available 3-26-82
AP For 3033
3042 Model 1
Serial #50085; 3036, 3037, 3038
Call Tom Clack
Transcomp Leasing Company
12900 Preston Road
Dallas, TX 75230
(214) 661-3908

DEC

11/24's
• NEW •
25% OFF LIST
GIBSON-MILLER ASSOC.
(609) 429-8444

For Sale or Lease
CDC 170/750 System
262K Memory
20 Peripheral Processors
Available:
February 1, 1982
Contact:
Rick Lehmann
Phone:
(301) 982-6775

BUY SELL
H•P
SYSTEMS OPTIONS
PERIPHERALS TERMINALS
Western Data Sales, Inc.
(213) 539-8917
P.O. Box 7000-158
Redondo Beach, CA 90277

BUY...SELL...LEASE
IBM SYSTEM/34
Save up to 25%
• ALL PERIPHERALS
• BUY or LEASE
• ANY CONFIGURATION
• IBM MAINTENANCE

Fraxions EQUIPMENT CORPORATION
(212)279-0069 (713)440-9753

AMDAHL V/6-II

8 Megs, 16 Channels
Available for Lease
March/April 1982
Charlie Berry
Major Computer Incorporated
10237 Yellow Circle Drive
Minnetonka, Minnesota 55343
612/933-6000

For Sale
IBM System 34
1-5340 CPU
96K
64 Meg Magazine
1-5211 Printer
300 LPM
1-5251 CRT Cable Thru
IBM Price $64,112
Sale Price $49,600
Available March 1, 1982
Bert Artis
Director Of Administration & Finance
PO Box 147
Walterboro, SC 29488
(803) 549-1739

VT 100AA's	$999
TI Terminals (all) NEW	20% + discount
Qume 5/45 KSR's (NEW)	$2,675
Qume 5/55 KSR's (NEW)	$2,799
-Call on all Sprint 5's and 9's	
Diablo 1620 KSR's	$1395
Teletype 4320AAK's (NEW)	$1195
Teletype 4320AAB's (NEW)	$1399
Hazeltine 1400's (NEW)	$495

Quantity Discounts Available

The Computer Bank
315 Walt Whitman Road
Huntington Station, NY 11746
(516)549-5500
See our other ad

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

AVAILABLE

4341's/4331's

and all 370 CPU's and peripherals

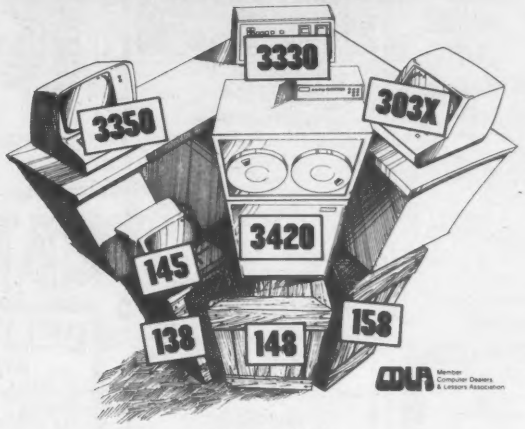
Randolph

800 243-5307

Randolph Computer Company
Division of The Bank of Boston
537 Steamboat Rd.
Greenwich, CT 06830
203 661-4200

CDLA

THE HARDWAREHOUSE IS HARD TO BEAT FOR PRICE AND AVAILABILITY.



Call Us Collect

UNITED STATES	
Boston: Eastern Regional Headquarters	**(617) 272-8110**
Washington, D.C.	(703) 521-0300
New York	(212) 832-2622
Philadelphia	(215) 293-0546
Syracuse	(315) 682-6120
Austin: Southern Regional Headquarters	**(512) 451-0121**
Atlanta	(404) 768-6535
Dallas	(214) 233-1818
Houston	(713) 629-4440
Chicago: Central Regional Headquarters	**(312) 789-9100**
Pittsburgh	(412) 922-8920
Ann Arbor	(313) 995-8717
San Francisco: Western Regional Headquarters	**(415) 283-8980**
Los Angeles	(213) 670-7994
Denver	(303) 534-7436
San Diego	(714) 231-2361
Seattle	(206) 447-1682
Phoenix	(602) 248-5978
Portland	(503) 228-7033
CANADA: Toronto	**(416) 366-1513**
Montreal	(514) 281-1925

BROKER/DEALER SALES AND LEASING
Phoenix: (602) 248-6848

168, 303X, 135, 145	
155, 138, 148, 158	**Ted Arbuckle**
Peripherals	**Keith King or Sandy Mitchell**
Communications & Terminals	**Craig West**
OEM Memory & 360	**George Beck**
GSD	**Wayne U. Smith**
Leasing	**Dave Revere**
Leverage Leasing	**Chuck Smith, Jr.**

GREYHOUND COMPUTER CORPORATION
Greyhound Tower Phoenix, Arizona 85077, 800-528-6113

DPD
PERIPHERALS

3330 3410
3340 3411
3350 3420

BUY • SELL • LEASE

COMPUTER BROKERS INC.
2978 SHELBY ST.
MEMPHIS, TENNESSEE

CB

901-372-2622

GSD
SYSTEMS

3 32
34 38

BUY • SELL • LEASE

ascd MEMBER AMERICAN SOCIETY OF COMPUTER DEALERS

FOR SALE OR LEASE

(2) IBM SYSTEM/34s 5340-E35 w/comm, 3262-B01

5340-D34, 5211-002 69% of IBM list

Available Immediately

CALL TARGA
FINANCIAL, INC. (612) 476-0606

For Sale Or Lease
3271-2 Remote Controllers
3272-2 Local Controllers
3277-2 CRTs
3286 3287 Printers
3274 Controllers
3278-2 CRTs
3279-2A Color Tubes
3287C02 Color Printers
Also 3740 Equipment
Contact Diane Prestigomo
Leasing Dyamics
1717 East Ninth Street
Cleveland, OH 44114
(216) 687-0100

DEC
SYSTEMS & COMPONENTS
•Bought
•Sold
•Lease

SYSTEMS
11/24 11/34 11/44 11/70

TAPES
TE16 TS11 TU10

MEMORY & OPTIONS
MK11-CE DZ11A, E, B

DISKS
RM02 RP06 RM03 RK07

Meadowlark Enterprises
Essex Street
Middletown, MA 01949
617/777-4666

BUY SELL LEASE

For Sale	Available
1403-N1 (UCS)	Now
3340-A2	Now
3333-01	Jan
3330-01	Jan
3203-02	Jan
3525-P2	Jan
3504-A2	Jan
3505-B2	Jan
3125-HO	Jan
3145-J2	Jan
Want To Buy	
3340-B2	Now
3420-06 (S.D or D.D.)	Feb
3420-08 (S.D. or D.D.)	March

Contact: Pat Milton

DATA AUTOMATION CO., INC.
4858 Cash Road
Dallas, Texas 75247
(214) 637-6570
CDLA

DEC
SYSTEMS • COMPONENTS
SYSTEMS • CONFIGURED
11/44 • 11/34 • 11/70
DISK DRIVES
RP06 • RJM02 • RM02 • RM03 • RK07PA & EA
TAPE DRIVES
TWE16 • TS11 • TU10
MEMORY + OPTIONS
MK11CE & BE • MJ11BA & BE
DZ11A • FP11C

H.I.S., INC.
COMPUTER SUPPLIERS SINCE 1972
(714) 840-1393
16400 PACIFIC COAST HIGHWAY, #219
HUNTINGTON BEACH, CA 92649

DEC Super Sale
25% Off
All New — Immediate Delivery

11X44BOX — **$23,500**
w/256KB, TU58, (CTS-500 optional)

D542E — **$48,800**
11/44, 256KB, Dual RL02, LA120, CTS-500

SM-FXMMA — **$21,500**
11/24, 128KB, Dual RL02, LA120, RSX11-M

SM-WXMMB — **$19,000**
11/23, 128KB, Dual RL02, LA120, RSX11-M

D532E — **$23,700**
11/34, 256KB, Dual RL02, LA120, CTS-500

Call Ed At 804-320-7860

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

1 Year 2 Year 3 Year Lease

3033-U16	Now
3033-N12	Now
3033-S8	4/82
3350's	3/82
3850 for 3033U	Now

Call:
Charlie Albright
Sha-Li Leasing Associates
(212) 742-2241
39 Broadway
New York, NY 10006

While They Last
11/23 Systems
36% OFF
M.E. Congdon
(203)728-6777
QUODATA

For Sale
HP 64000
64001S Logic Development System

Option No.	Feature
020	50M Byte Disc Drive (79W)
031	180 CPS Line Printer (2631B)
040	Tape Drive
100	Development Station
152	32K Byte Emulation Memory
212A	6800 Emulator
300	Logic Analyzer

$35,000

Call or Write:
Terry Ziegler
Transaction Management, Inc.
100 Keystone Road
Montgomeryville, PA 18936
215-643-5500

FOR SALE

(50) PERSCI 277 Floppy Drive, refurbished (for Cromemco, Qantel, etc.)	$ 700.
(20) MEMOREX 601 50 MBY Hard Disk, NEW	1200.
(20) Sperry Univac M1329 expansion chassis NEW	125.
(2) RICOH RP-1600 Daisy Wheel Printer, NEW	1250.
PDP11-34, USED	9000.
PDP11-34A, NEW	7500.
(4) TI 700 series modem	60.
(3) Altos Computer Board	900.
Trendata 1500, USED	400.
VADIC Modem Chassis, USED	1500.
DOCUMATION M400L card reader USED	900.
TAB 410 card punch, USED	300.
CENTRONICS 700 Series pin feed platens, motors, print heads, clutch, etc. Good for spare parts, NEW, LOTS in stock	Call
INTEL MDS 220	7900.
INTEL MDS 230	8700.
INTEL ICE 86	3500.
INTEL ICE 41	2500.
INTEL ICE 49	2500.
INTEL SBC 80/30	450.
INTEL SBC 204	450.
INTEL SBC 534	450.
INTEL SBC 614	85.

More in stock, send for complete listing.
Multibus our specialty.

Oracle Electronics & Trading Co., Inc.
2257 Mora Drive, Mountain View, CA 94040
(415) 961-4920 Ask for Newman/Hal

INTERSTATE COMPUTER EXCHANGE
EXPERTS IN **IBM**

S/34 BUY•SELL•TRADE SHORT TERM LEASE
S/38 • Series 1 • S/32 • 5110 / 5120
All GSD and DPD Equipment

- All Sys / 34 Configurations available
- We customize any 34 Configuration
- Guaranteed IBM Maintenance
- 25% to 30% Off IBM List on 34's
- All Peripherals and Upgrades
- Wanted! Rented or Owned 34's

Call PAUL CAYTON — 714/578-5410

System 34/System 38
Leasing Programs
Installed Or
On Order Equipment
Call For Quotation
Northern Group
(612) 546-0207

DATAWARE
SYSTEMS LEASE INC.
DELIVERS DEC NOW
Systems & Peripherals

- 11/44, RL02, RK05, RK07 or RM02. . . . . STOCK
- VAX 750, 780; RM05, RP06, RM03 or RK07. . . STOCK
- 11/34A, RL02; full system, New. $28,000
- 11/23, RL02, full system, New. $20,500
- Parts, boards, systems! Buy, sell, rent or trade! NOW!

30 Bay Street, Staten Island, NY 10301 (212) 447-4911
Toll Free: 800 221-6318 / Telex 429394 / TWX 710 588-6738

FOR SALE
PDP 11/34 $45K
256kb, dual 300 mb disks, tape, RSTS, WORD 11, guaranteed for maintenance.
NELSON HELM
(502) 584-4191

DEC
PDP 11X44CA
Immediate Delivery
New In Crate
Consists Of 11/44 CPU, w/256 K Memory, 8 K Cache, Memory Management, Bootstrap Module, Dual TU 58 Cartridge Tape Drive, 41 Inch H9642 Cabinet
List $31,800; Your Cost $24,640
American Data Processing
3867 Roswell Rd. NE
Atlanta, GA 30342
(404) 237-4797

For Sale:
Data General
CS50
25 Megabyte Disk
128 K Memory
1 LP2 Printer
4 Dasher D200 Terminals
Only Offers For Complete System At $32,000 Considered
Call Jan At
(215) 293-0712

LEASED SYSTEM (We're Sole Owners)
IBM 3081
Model D32 (33.5 Megs)
Scheduled Shipping Date- 3/26/82
CAN FIND NONE EARLIER!
Also
•3135 with Power Unit & Console
36 Mos. at $300 per mo.
•3145 with Power Unit & Console
36 Mos at $450 per mo.

CALL GEORGE GILMAN
I.O.A. DATA CORP.
Toll Free 800-221-8438
N.Y. (212) 673-9300
383 Lafayette Street, New York, N.Y. 10003

IBM 5110

Features:	32K, Basic, 2 Diskette	
	Diskette Sort	(3200)
	Expansion Feature	(1524)
	Bisynch Comm Adapt	(2074)
	EIA/CCITT Interface	(3701)
	Serial I/O Adapter	(8301)
	Channel Terminator	(1600)

DEC Spinwriter 5520 with built in keyboard
Bi-directional tractors

For Immediate Sale - Never Used - $8,000 firm
Comes with San Diego software word processing program.
CALL: Kris McNelly (215)-546-6100 x104
Write: A.J. WOOD MARKETING SERVICES
1405 Locust Street-12th Floor
Philadelphia, PA 19102

Available Immediately
DEC 11/34
Dual 5mb Caelus disk drives
128KB main memory
3 CRT's
LA-120
CTS-300 (RT-11 plus Dibol)
TSX-V9B
BASIC-11
Word Processing, General Financial/Accounting, Municipal Accounting Services, Payroll
TRC
804/263-4093

IBM
3270
PRINTERS, TERMINALS & CONTROLLERS
Please Call: (312) 943-3770
Forsythe/McArthur Associates, Inc.
919 North Michigan Avenue
Chicago, Illinois 60611

Buy - Sell - Lease
3741/3742
Short-Term Leases — All Models — Printers
S/34 S/32 S/38
Call: Steve Hough or Dick Geyer
Computer Marketing of America, Inc.
CMA
P.O. Box 90907
422 Acklen Park Drive
Nashville, Tennessee 37209
Call Toll Free
1-800-251-2670
In Tennessee: 615-297-7516

IBM computer cables
In stock - fast delivery
CABLExpress
(315) 476-3000

In Puerto Rico
Service Bureau
For Sale
Home premises 2,000 feet. Own 350/65, 2 megabytes. OS and DOS in full operation, $180,000.
Call T. Oliver
(212) 937-5317
Or Write
CMC, 29-11 40th Rd.
L.I.C., N.Y. 11101

Get to the "core" of your needs...

with
BUY, SELL, SWAP...

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

DGC - DEC
For all your computer needs
"Think PINZONE"
...the professionals.
Every order receives our

PRIORITY ATTENTION

Pinzone provides the professionalism you need at the lowest possible prices!
PINZONE & ASSOCIATES, INC.
807 South Main Street
Duncanville, Texas 75137
(214)780-1600 Telex 730•121Pinzone DCVL

Buy/Sell/Lease
BURROUGHS
'L' Series TC700
TC500 B700
F5000 S100
NCR
299 399 499
775 270 279
41 43 152
Boynton Business Systems
145 Route 208
Montgomery, N.Y. 12549
(914) 457-9221

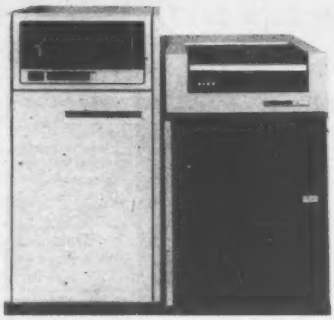
MEMORY BOARDS
PDP-11-LSI-11-VAX
NOVA-ECLIPSE
HARRIS
INTERDATA
- 100% compatible
- Substantial savings
- All new 1 yr. warranty

DIGITAL DATA SYSTEMS, Inc.
1551 NW 65th Avenue, Plantation, FL 33313
(305) 792-3290
OUR 8TH YEAR OF SERVICE

DEC USERS

NOW YOU CAN RENT OR LEASE any DEC

CPU
DISK
TAPE
TERMINAL
COMPONENT
PERIPHERAL
EVEN A SYSTEM



DATALEASE offers Monthly Rentals or Long Term Leases with the most Flexible Lease Plan available — Designed to fit your Financial Situation.

DATALEASE has a 2,000,000 dollar inventory from which to serve our clients.

DATALEASE can deliver what you want when you want it.

Let DATALEASE assist you while you are expanding your DEC installation.

DATALEASE

CALL NOW TOLL FREE:
800-854-0350
in California:
714-632-6986

or write for further information:
CALIFORNIA DATALEASE SYSTEMS AND FINANCIAL CORPORATION
2770 East Regal Park Drive, Anaheim, California 92806

Call Us First or Last But Call Us For Sure!
Buying • Selling • Leasing
IBM Systems & Peripherals
System 3
System 32
System 34
5110 • 5120
5251 (011 & 012's)
3741 • 3742
029 • 129
Southern Data Systems
2400 Crestmoor Road
Suite 305
Nashville, TN 37215
(615) 385-1755 or
800-251-2614

→NCR USERS
Are You Thinking of Trading Up ↑ ? or Down ↓ ?
Call Us for a Quote
SMITH ANDERSON CORP.
714-340-6688
Authorized NCR Systems Distributor - Nationwide
(New or Used Systems)
71-866 Highway 111
Rancho Mirage, Calif. 92270

IBM 3081 K15
Available for Lease Only
7-23-82
End Users Only
Call Ms. Julie Fern
ITT Industrial Credit Co.
612-227-2932

SERIES/1

- IMMEDIATE AVAILABILITY
- FEATURES & PERIPHERALS SOLD SEPARATELY
- GUARANTEED FOR IBM MAINTENANCE
- SYSTEMS CONFIGURED TO YOUR REQUIREMENTS
- IN-HOUSE STAGING PRIOR TO SHIPMENT
- REFERENCES FURNISHED

4952	4969's
4955	4973
4959	4974
4962's	4978
4963's	4979
4964	4997's
4966	4999's

All Features

SPECIAL — THIS WEEK
4955 - D Processor 64K.....$5,000.00

FRONTIER®
COMPUTER CORPORATION
4575 S. Westmoreland • Dallas, Texas 75237
214 - 330-7243
ascd

Nation's Largest Dealer of used
MICRODATA
Equipment
50MB DISC DRIVES in stock, complete systems, and Microdata look-alike systems.
BUY • SELL • TRADE
CALL COLLECT
(206) 852-2045
COMPUTER WHOLESALERS
15926 SE Lake Holm
Auburn, WA 98002

HEWLETT PACKARD
3000 SERIES
Most Common Configurations
Memory, Disk & Tape Subsystems, Terminals, I/O Accessories, Processors & Printers
1000 SERIES
21MX & 21MXE Series Systems In Stock.
Same Day Shipments On Memory Disc & Tape Drives
Buyers of all H.P. Surplus And Obsolete Systems and Parts
Call Us For An Immediate Quotation.
ADS
Alan De Martino
AIRBORNE DATA SYSTEMS
1112 Wrigley Way • Milpitas, CA 95035
(408) 262-5137

SYSTEM 43XX 3 34 38

And Associated Peripherals
BUY • SELL • RENT • LEASE

Sun Data, Inc.
The First Name in the IBM Second Market
(800) 241-9882
(404) 449-6116
6180 Atlantic Boulevard
P.O. Box 5250 / Norcross, Georgia 30091
CDLR

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

DASD
3370-3375
Immediate Delivery

L1-M2
UPGRADE 3 19 82
4341 N2 & P2
Early 1982 Deliveries
4331-K2
March - 1982

Tape Drives
3420
3410 8809
Immediate Delivery

Controllers
3880 3830
3803
Immediate Delivery

DASD
3350 3344
3340 3330 3310
Immediate Delivery

Printers
3203 1403
3287
Immediate Delivery

Control Units
3274 3272
3276 3271
Immediate Delivery

We Buy, Sell & Lease IBM Processors and Peripheral Equipment

Display Stations
3278 3277
Immediate Delivery

CDLA

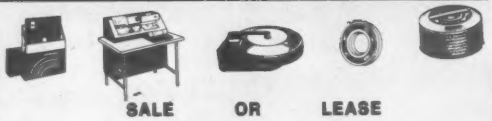
Contact Bernie Gest 215-782-1010
Computer Marketing Inc.
7704 Seminole Ave. Philadelphia PA 19126

DEALERS WANTED
Emulation Terminals

Burroughs: TD830, 983
Honeywell: 7700
NCR: 301, 501, 7900

DCI
Call Mark Goldman
215/968-0180

IBM UNIT RECORD EQUIPMENT
DISK PACKS, DATA MODULES, MAG, TAPE, DISKETTES



SALE OR LEASE

026	084	129	548	2316
029	085	514	555	3336(1)
082	087	519	3742	3336(11)
083	088	526	360/20	3348(70) Cartridges

Highest prices paid for used packs & machines.

Thomas Computer Corporation
600 North McClurg Court, Chicago, IL 60611
800-621-3906 Ill. 312-944-1401

Authorized Distributor
Memorex
CDC
3M
BASF

NEW USED
TERMINALS, CRT's AND PRINTERS
ADDS OKIDATA
DEC QUME
DIABLO SOROC
HAZELTINE TEXAS INSTRUMENTS
NEC TELEVIDEO

Buy and sell your DEC and DG systems and components from us.
Call us on micros - North Star, Televideo, Altos, Atari, Texas Instruments.
"We Will Not Be Undersold"
The Computer Bank
315 Walt Whitman Road
Hunt. Sta. New York, NY 11746
516-549-5500

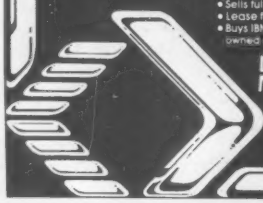
DIRECT SALE
IBM SYSTEM 3/15D
512K CPU
2.5 Megabyte Disk Storage
38 local/remote CRT's
8 CRT printers

Includes real-time on line savings & loan programs

Contact
American Federal Savings
Salem OR
503-399-2383

BUY, SELL, LEASE
4300's, S/3, S/1 S/38, S/34, S/32

- Purchase/lease backs of IBM GSD equipment
- Sells full systems, peripherals and up-grades
- Lease full system and peripherals
- Buys IBM equipment whether owned or rented/leased from IBM.



DANA MARKETING, INC.
835 Nineteenth Street
Hermosa Beach, Ca. 90254
Call collect (213) 372-8845
BOB COBURN OR DAVID EMORI

IBM 3033 N-12
6 Channels
Available For Lease
July 1st, 1982
Contact:
Dillard Department Stores
Bob Martin
Or Dan Phillips
(501) 376-5940
Or (501) 376-5941

3081-K32 Aug. '82 | **3031-3** AVAIL. IMMED.

3375-B1 AVAILABLE IMMEDIATELY | **3370's** A1 and B1's FEB. '82 | **3330-11's** MARCH '82 | **3340-B2** AVAIL. IMMED.

3420-3's Single Density AVAIL. IMMED. | **3803-1** Dual Density with 8100 AVAIL. IMMED. | **3420-7's** Single Density AVAIL. IMMED.

Call us for your IBM CRT & plug compatible peripheral needs
(201) 846-2200
Princeton Computer Associates inc.

Available Now
11/44
25% OFF
M.E. Congdon (203) 728-6777
Quodata

For Lease
IBM 4331
Model J01 (1 Meg)
Available Immediately
Call Ralph Sukla
Farmers Reliance Insurance Company
100 Franklin Corner Road
Lawrenceville, NJ 08648
(609) 896-1921

FOR SALE OR LEASE!
LONG OR SHORT TERM!
LOW MONTHLY RATES!
3277/78s
QUANTITIES AVAILABLE
CONTROLLERS AND PRINTERS
ANY TYPE KEYBOARD
(214) 258-0541

WE *OWN* WHAT WE SELL!

TWX 910-860-9285
MCC METROPLEX COMPUTER COMPANY, INC.
320 Decker Drive • Suite 180
Irving, TX 75062

MEMBER CCA

FOR SALE OR LEASE

IBM 3375 DASD Now
IBM 3370 DASD Now
IBM 3350 DASD (NEW) February
IBM 3705/M83 Now

Please Call: (312) 943-3770

Forsythe/McArthur Associates, Inc.
919 North Michigan Ave.
Chicago, Ill. 60611

BUYING?

Whether you're looking for big computers, little computers, terminals, printers, software, time sharing or services,

you'll find it in

Computerworld

classifieds.

Pages of ads every week, with everything from Discs to DEC's from time sharing to terminals, and software for every size computer system.

You'll find what you need in *Computerworld* classifeds.

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
375 Cochituate Road, Box 880, Framingham, MA 01701/(617) 879-0700

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

Dealers in: IBM PROCESSORS/ PERIPHERALS

3350 MOST MODELS, SOME NEW IMMEDIATELY AVAILABLE
3370 NEW AND USED IMMEDIATELY AVAILABLE
3375 SHIPPING 1-22-82
3380 SHIPPING 9-10-82

—SELL OR LEASE—

Machine Type/Model	Quantity	
4341	Several	Wanted
4331	Several	Wanted
3125GF	(1)	Available
3880-1	(1)	Available
3340-A2	(2)	Available
3340 B2	(1)	Available
3344-B2	(2)	Available
3411-3	(1)	Available
3410-3	(2)	Available
3203-5	(1)	Available
3274-C51	(1)	Available
3287-2	(2)	Available
3705-M81	(2)	4-1982
3705-M82	(2)	4-1982
3705-M83	(2)	4-1982
5415-D26	(1)	Wanted
3370	Several	Wanted
3742	(3)	Available
SYS 34	Several	Available
SYS 32	Several	Available

CDLA Member Computer Dealers & Lessors Association — ascd MEMBER AMERICAN SOCIETY OF COMPUTER DEALERS

data3 computer corporation 11000 Prairie Lakes Drive Suite 600 Eden Prairie, MN 55344 — Call Toll-Free 1-800-328-7938 or 612-941-3495 collect

---

FOR SALE

Digital PDP11/50 Computer system w/128KB memory

(2) RS11 disk drive
(3) RP03 disk drive
(1) TU10 tape drive
This will be open Wednesday, February 24, 1982

For bid information call:
Purchasing Director
City of Westfield, MA
(413)-568-9181 ext. 254

FOR SALE

Dec 11-70 System

1MB MOS MEM, 134MB Disk, Mag Tape, RSX 11M, FPP, 300LPM PTR, 16ASYNC ports, DEC maintained.
Available April 1, 1982.
For further information:

Contact:
Q.C. Data Collecters Ltd.
(403) 269-3306
Ask for B. Stevenson-G. Forbes

FOR LEASE

IBM 5251/011 Display Stations

$79 per month
Available Immediately

Call Jerry Bender
Leasing Dynamics, Inc.
1717 E. 9th St.
Cleveland, OH 44114
216-687-0100
CDLA

WE SPECIALIZE IN

NEW DEC EQUIPMENT

WE OWN WHAT WE SELL

TRANSCOM COMPUTER MARKETING, INC.
624 Haggard St., Suite 706
P.O. Box 447 • Plano, Tx. 75074
(214) 423-1854 • TWX 910-860-5736

3350 3370 3375

Disk Drives

Immediate Delivery

Sale or Lease

Contact Your Local Office

Atlanta	404—256-5956	Florida	305—428-3177
Boston	617—542-4005	Ft. Worth	817—534-1774
Chicago	312—698-3000	Michigan	313—644-1500
Connecticut	203—655-1211	New Jersey	201—568-9666
Dallas	214—258-6444	San Francisco	415—944-1111

Washington, D.C. 301—441-1000

COMDISCO

WANG

800-526-0791
In New Jersey
201-884-0920
BUY AND SELL
Standard Data Equipment, Inc.
2200T, VP, MVP, VS AND WORD PROCESSORS

3033-M12

Available March
Lease Only
Capital Associates International, Inc.
Gloria Balcom
(213) 541-8000

DEC

PDP 11/70 SYSTEMS

AVAILABLE NOW-DEC MAINTAINED

For these and other 11/70 systems requirements, please call:

C.D. SMITH
713-451-3112
TELEX 76-2547 CDSMITH HOU

EQUIPMENT AVAILABLE

Delivery Positions

Qty.	Machine Type	Model	Available
1	3375	A01	4/23/82
3	3375	B02	4/23/82
1	4341	L02	5/21/82

Description	For Sale/Lease	Date
	370/168	
168 - U34 (2150, 2151, 3855, 4650, 6111, 7850, 7905, 3066-2 and 3067-3)	lease only	now
168 - U32 (2150, 2151, 2152, 3623, 3855, 4650, 6111, 7850, 3066-2, 3067-3, 2860-2, 2870-1, 3-2880's)	lease only	now
168 - KJ (1435, 3855, 3066-2, 3067-2, 2-2870's, 3-2880's)	lease only	now
	370/158	
158 - U35 (1433, 1434, 1435, 7840, 3213-1)	lease only	now
158 - K (1433, 1434, 1435, 7840, 3213-1)	sale or lease	now
	370/148	
148 - K (2152, 4660, 6111, 3047-1, 3286-2)	sale or lease	now
148 - J (1450, 3622, 4458, 4953, 4958, 3047-1, 3286-2)	sale or lease	now

Contact: Jack Northrop
Lease Financing Corporation
3 Radnor Corporate Center
100 Matsonford Road
Radnor, Pa. 19087
215/527-4450
LFC
CDLA Member Computer Dealers & Lessors Association

IBM 5110 / 5120

SYS 32 SYS 34
BUY - SELL
IBM MAINTENANCE GUARANTEED

NATIONAL DATA SYSTEMS, INC. — 50 Congress Street Boston, MA 02109 (617) 720-1313

System 34 Upgrades
AVAILABLE IMMEDIATELY
All Models — 13 MB to 256 MB
IBM Maintenance Guaranteed
PRICED BELOW LIST IN MOST CASES
(617) 720-1313

IBM SYSTEM/34 MODEL F37

FOR SALE

256K/256MB CPU-5340
650 LPM Printer
Under IBM Maintenance-Available March 1982

Michael Toombs
(615) 459-5800
TRIDON INC.
Smyrna, TN

FOR SALE OR LEASE!
LONG OR SHORT TERM!
LOW MONTHLY RATES!

60 3278-2S
CONTROLLERS AND PRINTERS
ANY TYPE KEYBOARD
(214) 258-0541

WE *OWN* WHAT WE SELL!

MCC **METROPLEX COMPUTER COMPANY, INC.**
TWX 910-860-9285
320 Decker Drive • Suite 180
Irving, TX 75062
MEMBER CCB

BIDS & PROPOSALS

REQUEST FOR QUALIFICATIONS

Meridian Land and Mineral Company (Meridian), a subsidiary of Burlington Northern, Inc., is a Billings, Montana based company engaged in the management of coal and other mineral resources. Meridian is investigating the availability of data processing systems to meet their present and potential requirements in the areas of financial management/control, strategic planning, and mineral prospect evaluation. Toward this end, Meridian is soliciting information from qualified vendors possessing software/capabilities in the following areas:

Financial Management/Control

- Accounts payable/purchasing
- Accounts receivable
- Revenue/royalty
- Payroll
- Joint interest billing
- Project management
- Property operating summary
- General ledger/financial reporting
- Mineral/property lease management

Strategic Planning

- World coal movement modeling
- Mineral transportation macroviews
- Time series forecasting techniques
- Matrix manipulation
- Monte Carlo simulations
- Regression analysis
- Statistical evaluations

Mineral Prospect Identification and Analysis

- Geologic information systems
- Reserve analysis/plotting
- Surface mining simulation
- Mine operating cost generator
- Risk/sensitivity analysis

All prospective vendors should send appropriate qualification materials and a letter of interest to:

DELOITTE, HASKINS + SELLS
William C. Carey
633 Seventeenth Street
Denver, Colorado 80202
(303) 534-8153

NOTICE OF REQUEST FOR PROPOSAL

The Maryland-National Capital Park and Planning Commission hereby invites proposals from interested persons or firms for the purchase of either packaged system software of custom designed software, to be utilized on a HEWLETT-PACKARD 3000 COMPUTER SYSTEM. The software being sought is needed in order to automate our Fleet Management and Parts Inventory Systems. System specifications will be furnished by the Management Analysis Office of the Montgomery Parks Department, M-NCPPC, 9500 Brunett Avenue, Room 125, Silver Spring, MD., on or after February 8, 1982. There will be a non-refundable charge of $25.00 for copies of the specification. Checks should be made payable to: The Maryland-National Capital Park and Planning Commission.

Proposals will be received in the above office until 3:00 P.M., EDT, March 8, 1982. Proposals will be secured in such a manner that the financial contents will not be disclosed to anyone other than the project coordinator and the data processing chief during the requesting and selection process.

In the event the Commission offices are closed or there is a delay in the normal starting time, due to weather or other contingencies, the proposals will be received until 9:30 A.M. on the first full Commission business day following the closing. If there are any questions regarding this project, please call Richard Schroth at (301) 565-5828.

All submitted proposals and associated documents will become the property of M-NCPPC and will be considered public information unless other arrangements are made.

By Thomas H. Countee, Junior. Executive Director
M-NCPPC is an EOE/M-F-D Agency

SURPLUS EQUIPMENT BID

Sealed bids for the sale of:

1-PDP8M w/TU56 Tape Unit
1-PDP 11/34A 64K 2-RX01 Disks
1-PDP 11/34A 64K 2-RX01 Disks
1-VT52-AA CRT
1-VT52-AE CRT
3-LA180-PA Printers
7-LA36 Printers
1-Educomp Mark Sense Card Reader
2-DEC Mark Sense Card Readers
1-Teleray 3811D CRT
2-Teletype 33 ASR
2-Genesis One Keypunches

Only bids received prior to February 26, 1982 and contained in a sealed envelope marked D230-0226 will be considered. Equipment as is where is. Successful bidders will be responsible for packing and shipping charges for the equipment. Consolidated High School District 230 reserves the right to reject any and all bids. All bidders will be notified prior to March 8, 1982. All bids must be valid until April 1, 1982. Cash/Check only. 10% bid bond must accompany bid. Only successful bidder's bonds will be cashed. All equipment successfully bid must be shipped by April 1, 1982. Equipment available March 8, 1982. All equipment operational except PDP 8M-TU56.

ALL INQUIRIES AND REQUEST FOR INSPECTION MADE THROUGH:
ComCoTec, Inc.
825 N. Cass Ave
Suite 104
Westmont, Il 60559
312 325-1800

SUBMIT ALL BIDS TO:
Consolidated High School District 230
111 & Roberts Road
Palos Hills, Il 60465
Attn: J. Popernik D230-0228

BUSINESS OPPORTUNITY

WANTED:

A few good men and women, willing to bank on their abilities by investing in their futures

Do you feel that you've reached your full potential as a businessperson?

If not, Bryant Bureau offers you a new and exciting opportunity in the rapidly growing profession of Recruiting and Placement.

By having confidence in your business abilities and if you like people, owning a Bryant Bureau Recruiting and Placement Franchise could be the best move that you will ever make.

For complete details, phone or write our Franchise Development Department today. Call Toll Free.

THE NEW
Bryant Bureau
The Recruiting and Placement Specialists

4000 S. Tamiami Trail, Sarasota, FL 33581
Phone toll-free 800-237-9497

Another Division of Snelling and Snelling, Inc.
The World's Largest Employment Service with over 600 offices

SOFTWARE FOR SALE

MathPak

RPG II Statistical Programs For The IBM SYSTEM 34

- Linear Regression
- Trend Projection
- Work Sampling Accuracy
- Compound Interest
- Reorder Quantity by ROI
- Standard Deviation
- Probability (Poisson)
- Reorder Point(Poisson)
- Statistical Inference

$290 One Time License Fee

DEXEL
479 North Potomac Street
Hagerstown, Maryland 21740
800-368-2021

THE TIME SAVERS

RPG to COBOL
or for those PL/1 Shops
RPG to PL/1

Two of the many **successful** translators offered by Dataware provide a smooth and effortless transition from RPG. The translators can handle most any level of RPG (SYS/3, Mod 20, etc.) and achieve an extremely high percentage of automatic conversion (approaching 100%) of the source code.

For more information please call or write today!

The Conversion Software People
Dataware, Inc.
2565 Elmwood Ave., Buffalo, NY 14217 (716) 876-8722 | TELEX 91519

SERIES/1

DATA ENTRY SYSTEM

Data Entry using IBM IDES II is now available on EDX operating systems utilizing 4978 or 3101 terminals. Our product is powerful enough to replace CMC/PERTEC*, ENTREX*, FOUR PHASE*, CADE* key disk system in a single partition program.

Demonstration and trial installation available immediately. Direct inquires to:

Datronics Systems, Inc.
1729 N. Central Expwy
Plano, TX 75075
214/422-7711

FINALLY!

S/38 S/34 S/3 S/32 SCOUT™ SOFTWARE DIRECTORY

an affordable software directory

HARDWARE TARGETED

JUST $50 PER YEAR FOR EACH SYSTEM DIRECTORY INCLUDING TWO UPDATES!

For subscription information, write: SCOUT, Software Times, Department CW, 1523A N. La Brea Ave., Suite 179, L.A., CA 90028/(213) 785-3585

REAL ESTATE

Downtown Boston Computer Room-Office Space For Lease

Highly improved 3,758 sq. ft. computer room. Raised floor. Halon fire system. 2 separate 200 Amp 42 circuit electrical services each with voltage regulator. 3 air cond. units, total 48 tons. Security system. 4,025 sq. ft. office space.

Exclusive Leasing Agent

Meredith & Grew, Incorporated
(617) 482-5330

Find the right facility in the Real Estate pages of

Computerworld

software for sale | software for sale | software for sale | software for sale | software for sale

Make your IBM System/34 work harder for you.

FactFinder™
Data base information system accesses the computer with simple English commands. Inquiries, reports, graphs.

WordPower™
Advanced full function word processing... from letter writing to documentation. Easy text entry and editing.

EasyPlan™
Easy-to-use, electronic financial planning and modeling system. Produces financial work-sheets, consolidations, projections, "What-if" analyses.

DaisyWriter™
Compatible, high quality, low-cost daisy wheel printer. Interchangeable plastic and metal wheels. More than 100 type styles.

RMS
Complete, integrated set of application software modules for order processing, distribution, production, and financial management.

Information Systems
Design, development and implementation of custom information management systems.

From word processing to financial planning... consulting to programming... PCR has the resources to help you maximize your IBM System/34 productivity.

Professional Computer Resources, Inc.
2021 Midwest Road, Oak Brook, IL 60521
In Illinois call: 312/932-2200
Outside Illinois: 800/323-3331
San Francisco: 415/461-7580
New York: 212/772-0432

pcr professional computer resources

YOUR HP3000
WAS MADE FOR COLLIER-JACKSON'S FINANCIAL ACCOUNTING SOFTWARE
...and we planned it that way.

Actually, COLLIER-JACKSON created DESIGN/3000 exclusively for the HP3000.

It's a set of completely on-line Financial Control Systems written in COBOL II and utilizing V/3000. COLLIER-JACKSON will help you install them as stand-alone modules or an integrated system, complete with 90-day warranty and ongoing support.

- Payroll (PAYPLUS/3000)
- General Ledger (LEDGER/3000)
- Accounts Payable (FPS/3000)
- Accounts Receivable (ARS/3000)

DESIGN/3000 AND HP3000... MADE FOR EACH OTHER.

COLLIER-JACKSON, INC.

5406 Hoover Blvd.
Tampa, Florida 33614
(813) 885-6621

2104A West 25th St.
Lawrence, KS 66044
(913) 749-0923

EDX SERIES/1 UTILITIES

MTM BATCH JOB INVOKER	$180
MTM MENU PROCESSOR	$240
MTM VIRTUAL UTILITY PROCESSOR*	$ 80
MTM VERIFY DISKETTE ON-LINE*	$ 60

*Also available for non-MTM applications.
Shipped on diskette with full operating instructions.
Order prepaid only from:

(WSSI) Wakefield Software Systems, Inc.
28 D Vernon Street
Wakefield, MA 01880
(617) 246-2200

IBM SERIES/1 QUERY - REPORTWRITER * ASSISTAR *

NEW - LEVEL 2

- Easy to use.
- Full featured yet inexpensive. Works automatically with IBM utilities and EDX oper. system.
- Create reports in 5-10 minutes. Use with sequential and indexed files.

$1750.
(quantity discounts available)

To Order or for Sales Brochure, Contact: Sherry Hunter

i-concepts, inc.
2560 Royal Lane
Dallas, Texas 75229
(214) 243-0700

SOFTWARE IBM System/34

- General ledger
- Investments
- Check reconciliation
- Stockholder accounting
- Fixed assets
- Proof of deposit

COMPUTER BASED SOLUTIONS, INC.

7315 Wisconsin Ave.
Suite 603 East
Bethesda, MD 20814
(301) 652-8897

ELEGANT SOFTWARE
For IBM S/34 & S/38 Computers

- Fixed Assets
- Order Processing
- Inventory Management
- General Ledger
- Accounts Payable
- Accounts Receivable
- Mailing Lists
- Payroll/Personnel
- Oil and Gas

All systems are:
- Interactive
- Flexible
- Easy to Install

J.D. Edwards & COMPANY
Architects and Builders of Information Systems
Two Denver Technological Center
Englewood, Colorado 80111
(303) 773-3732

Have you spent too much time and money trying to get your application working on the

IBM Series/1

You should try PXS, an application generator for the Series/1 – over 1000 current users.

H & A Computer Systems
P.O. Box 15025
San Francisco, CA 94115
415-434-3517

VAX

If you have a VAX, Printronix P300, DEC LXY-11, or Tektronix PLOT10 Compatible Equipment

We have economical and easy-to-use graphics
CalComp Compatible
3-D Perspective Plots
Curve Fitting and Smoothing
Fortran Callable, Fortran Sources Included
Native Mode under VMS
Fully Documented • Tested for Many Years

Call Frankie Anderson (206) 827-0460
MSNW Computing Services
2755 Northup Way
Bellevue, Washington 98004

GRAPHICS

HASP for **VAX** and **PDP-11**
high speed communications link to
IBM•CDC•DEC•ETC
REMOTE BATCH, DISTRIBUTED PROCESSING, AUTODIAL, LOW OVERHEAD, NO RISK TRIAL

datanex
Datanex, Inc., P.O. Box 30008
Eugene, Oregon 97403 (503) 687-2520

Wholesalers! The proven software system you need is IMPACT/34

It turns the IBM System 34 into a warehouse of information!

IMPACT/34 packs more data processing power than any other system available. Even IBM's own software can't touch it.

IMPACT/34 was created by a successful wholesaler with 25 years of experience and he programmed it to handle the thousands of operating and planning details in every area of your wholesale business.

IMPACT/34's worth is being proven in everyday use by other wholesalers and can help you operate with an efficiency you never dreamed possible. Without waiting or start up delays!

Call toll free or send for more info on the impact that **IMPACT/34** will have on your bottom line!

1-800-321-7496 (in Ohio 1-800-362-9356)
Robert Routman & Associates
17 Colonial Drive/Youngstown, Ohio 44505

Tell me how IMPACT/34 can improve my bottom line.
☐ Send more info ☐ Please call me at _____
Company _____
Name _____ Title _____
Address _____
City _____ State _____ Zip _____
C2882

RSTS/E & RSX-11M
SOFTWARE PACKAGES

KDSS a multi-terminal key-to-disk data entry system.

TAM a multi-terminal screen-handling facility for transaction-processing applications.

FSORT3 a very fast record sort for RSTS/E.

SELECT a convenient, very fast package for extracting records that meet user-specified selection criteria. (RSTS/E only.)

BSC/DV a device driver for the DEC DV11 synchronous multiplexer that handles most bisynchronous protocols. (RSTS/E only.)

COLINK a package that links two RSTS/E systems together using DMC11s.

DIALUP a package that uses an asynchronous terminal line to link a local RSTS/E system to a remote computer system. Supports file transfers, virtual terminals, and dial-out through a DN11.

Evans Griffiths & Hart, Inc.
55 Waltham Street
Lexington, Massachusetts 02173
(617) 861-0670

software for sale | software for sale | software for sale

IBM SYSTEM/34

Para Research offers a different marketing approach for software. Simply stated, we provide the best software packages at lower prices. We do this to obtain volume sales, a larger user base and to encourage user feedback. In fact, this approach and the input of our many users have made us what we are today: the world's largest distributor of System/34 software. All packages are completely documented, supported by our hotline staff and our money-back guarantee.

WORD PROCESSING $750

Paratext is the most successful and complete word processing system available for the System/34. There are more than 1,300 Paratext users. Paratext offers full-screen text editor, automatic justification, individual forms design, viewable corrections, heads-down typing, word wraparound, variable data insertion, label printing and math capabilities.

FINANCIAL MODELING $500

Paracalc is a diversified modeling system that easily calculates budgets, cash flow, sales projections, commissions, return on investment, production forecasts, anything you can set up in rows and columns. Change one entry and all amounts are re-calculated accordingly in up to 24 columns and 400 rows.

ACCOUNTING SYSTEMS $500

General Ledger, Accounts Payable, Payroll, Fixed Assets Accounting, Billing, Accounts Receivable and Inventory. Whatever your needs in financial applications, Para Research has the answer. All modules support multiple companies, all are interactive and all can be interfaced with existing software.

DATA SYSTEMS $250 to $600

Documentor provides complete automated documentation, with up to fifteen individual reports that describe systems and subsystems in each program. Reports can be easily updated anytime with no programmer involvement. Clock, an advance job scheduler, allows your System/34 to be productive 24 hours a day. Rescue is a procedure re-start program that can also be used to create duplicate programs and procedures.

At your request, we will send a complete set of documentation, free of charge. Also, ask us for a list of user names in your area.

PARA RESEARCH

Call or write Software Sales, Dept. CW9, Para Reseach Inc., Whistlestop Mall, Rockport, MA 01966 (617) 546-3413

The SCREEN MACHINE
On-line Data Entry System for Medium Systems

- Menu Driven
- Interactive Screen Design
- Multi-Customer Editing
- Checkdigit Editing
- Card Image Output To Pseudo Reader
- Data Segregation By Customer
- Extraction By Customer Or Application

Call Or Write:
THE HYDE COMPANY
2180 Clairmont Road
Decatur, Georgia 30033
(404) 321-5049

Fixed Asset Accounting
Depreciation Software for the
IBM System/34
Features Book & Tax Methods
For more information, call or write Barbara Richards today. Phone (301) 663-5122
Linton, Shafer & Company
Certified Public Accountants

You haven't seen
WORD PROCESSING
on the IBM
SYSTEM/34 or
SYSTEM/38
until you've seen
ZWORD
ACCUSOFT, INC.
One California Street, Suite 2230
San Francisco, California 94111
800-227-6204 Ext. 302
In Cal.: 800-632-2131 Ext. 302

TIME & SERVICES

MEMORY REPAIRS
ALL MANUFACTURERS
DEC, NOVA, OR ANY OTHER

- 10 Day Turnaround.
- 90 Day Warranty.
- Core or Semi-Stack Repairs.
- Reasonable Prices (From $90.
- Low Flat Fees Available for Dems, Large Users and Repair Labs. 100% Burn-in.

DIGITAL DATA SYSTEMS, INC.
Florida (305) 792 3290
Boston (617) 491 3859
Chicago (312) 475 8435
Philadelphia (215) 272 7442
OUR 8TH YEAR OF SERVICE

NEW ENGLAND AREA LASER PRINTING SERVICES
(Xerox 9700)

- 2 Sided Printing on 8 ½ x 11 Stock Landscape or Portrait
- Programming Service Available for Forms Creation
- Pick Up & Delivery
- 7 Day, 24 Hour Operation Resulting in Fast Turnaround
- Attractive Alternative for Peak Load Printing

Also available computer output microfiche

TOPS
TAPE OUTPUT PRINTING SERVICES
P.O. Box 297 • Wellesley, MA 02181
617/237-5582

CURTIS-WRIGHT Computer Services
370/158–3 370/148
VS1–CMS–ROSCOE–DOS
REMOTE JOB ENTRY
INTERACTIVE COMPUTING
CUSTOMIZED SOFTWARE
FACILITIES MANAGEMENT
CONTACT JOE BARRETT
(201) 777–3454
15 MINUTES FROM LINCOLN TUNNEL
ONE PASSAIC STREET
WOOD-RIDGE, N. J. 07075

TIMESHARING AVAILABLE
VAX 11/780-VMS
PDP 11/70-RSTS/E

- FORTRAN, COBOL, BASIC
- DATATRIEVE
- ORACLE ®
- STATISTICAL PACKAGES
- DECNET
- TYMNET ACCESS

CONTACT:
James F. Kelley
INSLAW, Inc.
Washington, D.C.
(202) 628-8600

® trademark of Relational Software, Inc.

VAX - 11
ON-SITE COURSES

- FORTRAN PROGRAMMER

Call toll-free for detailed course outlines. The cost is $3,200 per week. We also conduct several courses for RSX-11M.

Mini & Micro Educ. Services
(800) 824-7888 ext. M4573
(800) 852-7777 ext. M4573

RSTS CHEAP!
11/70, 24 Hours, 7 Days
$5/hour connect or
$350/port/mo. unlimited +
$20/MB/MO
B+, B+2, DIBOL, etc.
WORD-11, TECO, ED2
NATIONWIDE DATA DIALOG
Dave Mallery
215-364-2800

LOOKING FOR DEVELOPMENT TIME?
$7 PER HOUR CONNECT TIME
NO KILOCORE TICK CHARGES
NO CPU CHARGES
RSTS/E TIME
BASIC PLUS
BASIC PLUS / PASCAL / "C" WITH CROSS COMPILER SUPPORT
WORD-11 WORD PROCESSING
WAIT / TECO / EDT PROGRAM EDITING
BUDGET BYTES 212-944-9230
by OMNICOMPUTER, INC.
1430 Broadway, New York, N.Y. 10018

SPECIAL OFFERING
Wall Street Area
4341/158-3
OS VS/1
All Ships
COMPUTER ALTERNATIVES
555 Goffle Road
Ridgewood, NJ 07450
(201) 652-0400

ADVERTISERS' INDEX

Advanced Digital Products 125
Alanthus 116
Altos Computer Systems ID/4-ID/5
American Telephone & Telegraph/Long Lines ID/23
Anderson Jacobson 13
Ann Arbor Terminals 15
Applied Information Systems 105
Atlas Energy Systems ID/29
Auto Control 54
Axios, Inc. 140

Backus Data Products, Inc. 68
BASF ID/30
BDS Computer Corp. 9
John Beal 123
Bear, Sterns & Co. 134
B.I. Moyle & Associates 124
Carl R. Boehme & Assoc., Inc. 97
Boole & Babbage 95
Britton Lee 46

Cardinal Computer 40
CGA Software Products Group ID/3
Chubb Institute 134
Cincom Systems, Inc. 83, 85
Codex Corp 59, 60-61, 62-63, 64
Comdata 107
ComDesign 16, 140
Comdisco ID/36
CompEd 90
Computer Associates 5
Computer Maintenance & Leasing 10
Computer Management Research 121
Computer Techniques 49
Computer & Terminal Exchange 109
Computerweek 126-127, 128
Computrend ID/28
Compuware 11
Consumer Systems 68
Continental Resources ID/2
Control Concepts Corp. 8
Control Data Corp. ID/12-ID/13
CS Computer 96
Cullinane Database Systems, Inc. 93
CW Office Automation 67
CW Supplement 76
Cylix Corp. 71

Data General ID/17-ID/20, 112-113
Datamedia Corp. 31
Datapoint 124-125
Datapro 117
Dataprocessing Design 58
Dataproducts 110-111
Data Systems for Industry 54
Digital Associates 6
Digital Communications Corp. ID/24
Digital Equipment Corp./Icg 21
Digital Equipment Corp./npm 136-137
Digital Equipment Corp./Software Services 72
Digital Microsystems 132
Digital Pathways ID/6
Digital Research 122
DOSC, Inc. 138
D.P. Facilities 16
Duquesne Systems, Inc. 101
Dylon Corp. 44
Dynabyte 139
Dynon Corp. 28-29

Eastman Kodak Co. 53
The Educational Coop. 28
Emulex Corp. 32

Four Phase Systems 120
FTW Associates, Inc. 86
Fusion Products 114

General Electric 74
General Terminal Corp. 49
Genesys 99
Gould, Inc., S.E.L. Computer Division 65
Graham Magnetics, Inc. 103

Hamilton Rentals 75
Harris Corp./ Computer Systems Division 102
Henco, Inc. 17
Hewlett Packard 37, 135
Hughes Aircraft ID/8, 23

ICCP 56
Image Data 18
Informatics 27
Information Methods 133
Innovation Data Processing 7
Intel Corp. ID/32-ID/33, 63
Intelligent Systems Corp. 78
Interactive Technology 44
Intertel, Inc. ID/11
Invitational Computer Conference ID/16
ISSCO 20

Johnson Systems, Inc. 91

Lear Siegler 41
Lexicon 88-89

MAI/Sorbus Service ID/14
Management Science America 100
Mantissa Corp. ID/21
Mathematica 84
McDonnell Douglas 56
McGraw-Hill Book Clubs Division 47
MDS Mohawk 57
Memorex Media Products Group/RMCD 70
Mini Computer Business Applications 105
Moore Business Forms ID/22
MTI 40

National Advanced Systems 45
Newman Computer Exchange, Inc. ID/27

On-Line Software International 100
Oregon Software 96-97
Oxford Software 30

Pace Applied Technology 53
Pansophic 87
Paradyne Corp. 69
Perkin Elmer 106
Productive Software 16

Qume 129
Qwikterm 48

Racal Vadic 36
Ramtek 121
Raytheon Data Systems 98
Reiter Software 14
Rockie Smith Enterprises 26

Saturn Systems 86
SAS Institute, Inc. 94
SDA 24
Selanar Corp. 22
Sheraton Tara 18
Signal Technology 140
Software AG 51
Software Corp. of America 73
Software International 104
Software Results Corp. 139
Solutions, Inc. 56
Storage Technology 130-131
Stratus Computer 35
Synapse 25
Syncsort, Inc. 3
Systems Documentation, Inc. 89
Systems Industries 56, 82

Tandem Computer 19
Technology Transfer ID/7
Telcon 118
Teleprocessing Products 13
Teleray 100
Telex Computer Products, Inc. ID/26-ID/27
Texas Instruments 66
Texprint 58
Three Rivers Computer Corp. ID/10
Tone Software 134
Triangle Software 16
TSI International ID/35
TT Teletype 38

Vertex Systems, Inc. 29
Visual Technology, Inc. 52

Wabash Tape 77
Walker Interactive 63
Wang Institute 18
Wang Laboratories ID/34
Westinghouse Information Services 58

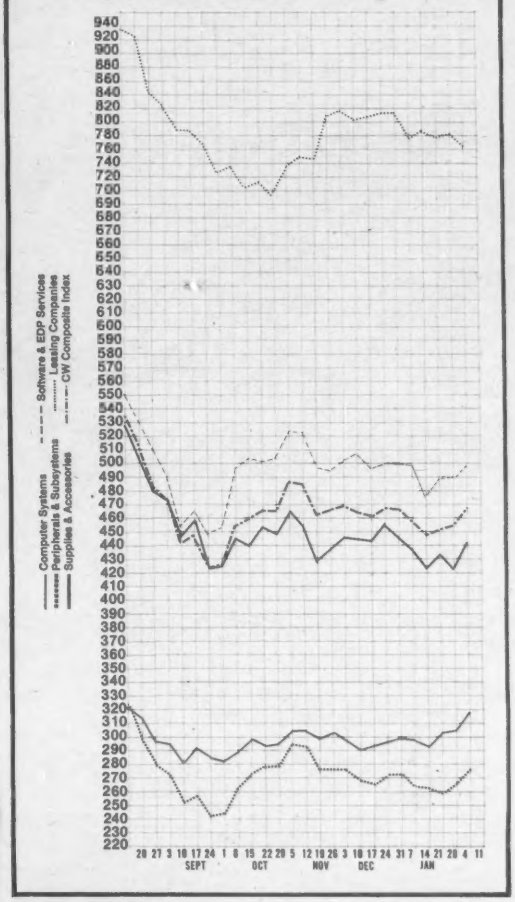
Xerox Corp. 33

Yourdon Press 8

Zentec 79

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Computerworld Stock Trading Index



Computerworld Sales Offices

Roy Einreinhofer, **Vice-President/Marketing.** Donald E. Fagan, **Vice-President/Sales.** Frank Collins, **Manager, Display Advertising.** William J. Mills, **Manager, Classified Advertising.** Diana La Muraglia, **Manager, International Marketing Services.** COMPUTERWORLD, 375 Cochituate Road, Box 880, Framingham, Mass. 01701, Phone: (617) 879-0700, Telex: 95-1153.

BOSTON SALES OFFICE: Chris Lee, **Northern Regional Manager.** Edward P. Marecki, Joseph Fitzhugh, **District Managers.** Kathy Doyle, Diane Sukey, **Account Coordinators.** COMPUTERWORLD, 375 Cochituate Road, Box 880, Framingham, Mass. 01701, Phone: (617) 879-0700, Telex: 95-1153.

NEW YORK SALES OFFICE: Michael J. Masters, **Eastern Regional Manager.** Peter Senft, Doug Cheney, Ray Corbin, **District Managers.** Marge Corcoran, **Account Coordinator.** COMPUTERWORLD, Paramus Plaza I, 140 Route 17 North, Paramus, N.J. 07652, Phone: (201) 967-1350.

CHICAGO SALES OFFICE: Dave Dolber, Newt Barrett, **District Managers.** Jan Raska, **Account Coordinator.** COMPUTERWORLD, 2600 South River Road, Suite 304, Des Plaines, Ill. 60018, Phone: (312) 827-4433.

LOS ANGELES SALES OFFICE: Jim Richardson, **District Manager.** Bob Hubbard, Delbra Pendergrass, **Account Managers.** Beverly Raus, **Account Coordinator.** Eileen Dunn, **Recruitment Account Manager.** Phone: (415) 421-7330. COMPUTERWORLD, 18008 Sky Park Circle, Suite 260, Irvine, Calif. 92714, Phone: (714) 556-6480.

SAN FRANCISCO SALES OFFICE: William J. Healey, **Western Regional Director.** Barry G. Milione, Linda J. Tucker, **Account Managers.** Ruth Gordon, **Account Coordinator.** Eileen Dunn, **Recruitment Account Manager.** COMPUTERWORLD, 300 Broadway, Suite 20, San Francisco, Calif. 94133, Phone: (415) 421-7330.

JAPAN: Mr. Shigema Takahashi, **General Manager.** DEMPA/COMPUTERWORLD, 1-11-15 Higashi Gotanda, Shinagawa-ku, Tokyo 141, Phone: (03) 455-6101, Telex: J2424461. Esteban H. Yamada, **CWCI Marketing Director.** Tokyo Representative Corp., Yamaguchi Bldg., 2-12 Kanda Jimbo-Cho, Chiyoda-Ku, Tokyo 101, Phone: (03) 230-41178, Telex: J26860. **UNITED KINGDOM:** Julian Marshall, Thomson Computerworld Ltd., 146-148 Clerkenwell Road, London EC 1R5DJ, Phone: 01-837 1222, Telex: 269477. Euan C. Rose, BEERE, HOBSON ASSOCIATES, 34 Warwick Rd., Kenilworth, Warwickshire, CV8 1HE, Phone: (0926) 512424, Telex: UK-311951. **WEST GERMANY:** Eckhard Utpadel, CW PUBLIKATIONEN, Friedrichstrasse 31, 8000 Munich 40, Phone: (089) 34-90-61, Telex: W. Ger-5-215350-HKFD. **AUSTRALIA:** COMPUTERWORLD PTY. LTD., 37-43 Alexander Street, Crows Nest, NSW 2065, Phone: (02) 439-5133, Telex: SECCO AA25468. **BRAZIL:** Eric Hippeau, COMPUTERWORLD do BRAZIL, Servicos e Publicacoes Ltda., Rua Alcindo Guanabara, 25/10th Floor, 20031 Rio de Janeiro, RJ, Phone: (021) 240-8225, Telex: 11-32017 (WORD BR). **MEXICO:** Kevin Kelleghan, COMPUTERWORLD de MEXICO, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F., Phone: (905) 514-4218, (905) 514-6309. **FRANCE:** Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. **SPAIN:** Neil Kelley, COMPUTERWORLD/Espana, Barquillo, 38, Madrid-4. **DENMARK:** Helle Lind Christensen, Computerworld/Denmark, Gammel Strand 50, 1202 Copenhagen K. Phone: 01-1234-11.

CW COMMUNICATIONS/INC.
Board Chairman/Publisher
Patrick J. McGovern
President
W. Walter Boyd

VP-Research, Jack Edmonston. **VP-Marketing,** Roy Einreinhofer. **VP-Finance,** William P. Murphy. **VP-Circulation,** Margaret Phelan. **VP-Production,** Lee Vidmer.

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 880, Framingham, MA 01701, Phone: (617) 879-0700, Telex: 95-1153.

SALES — **Vice-President,** Donald E. Fagan. **Display Advertising Manager,** Frank Collins. **Display Advertising,** Melinda Walker, Anne Hadley, Jenny Charlesworth. **Classified Advertising Manager,** William J. Mills.

MARKETING SERVICES — **Vice-President,** Jack Edmonston. **Director Research,** Kathryn Dinneen. **Sales Promotion,** Peter Segal.

CIRCULATION — **Vice-President,** Margaret Phelan. **Circulation Manager,** Barbara Jeannetti. **Distribution Services,** Ed Hare. **Service Rep,** Peggy Kelly. **Assistant,** Carmela Priante.

PRODUCTION — **Vice-President,** Lee Vidmer. **Production Manager,** Peter Holm. **Supervisor,** Henry Fling. **System Manager,** Tom Pfau. **Type Manager,** Carol Polack. **Art Director,** Tom Monahan.

Computerworld Stock Trading Summary

TRADE*QUOTES

All statistics compiled, computed and formatted by TRADE QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES WEDNESDAY, FEBRUARY 3, 1982

COMPUTER SYSTEMS

EXCH		1981-82 RANGE (1)	CLOSE FEB 3 1982	WEEK NET CHNGE	WEEK PCT CHNGE
A	AMDAHL CORP	23- 46	26 1/2	+1 3/4	+7.0
N	BURROUGHS CORP	28- 72	32 3/4	+1 3/4	+5.6
O	COMPUTER AUTOMATION	9- 28	12 1/4	+1	+8.8
N	CONTROL DATA CORP	99- 42	34 5/8	+1 1/2	+4.5
N	CRAY RESEARCH INC	29- 49	34 3/4	+ 1/4	+0.7
N	DATA GENERAL CORP	42- 87	53 1/8	+2 1/8	+4.1
N	DATAPOINT CORP	36- 68	36 1/4	-10 1/8	-21.8
N	DIGITAL EQUIPMENT	80-113	87 1/8	+ 5/8	+0.7
A	EECO INC	7- 19	8 3/8	+ 1/4	+3.0
N	ELECTRONIC ASSOC.	5- 13	8	+ 3/4	+10.3
N	FOUR-PHASE SYSTEMS	18- 46	39 3/4	+ 1/2	+1.2
N	FOXBORO	42- 62	50 1/2	-1 1/4	-2.4
O	FULCRUM COMP GRP	1- 3	3/8	0	0.0
O	GENERAL AUTOMATION	6- 16	8 1/8	+ 1/4	+4.2
N	HARRIS CORP	31- 60	33 3/4	+1 3/8	+4.2
N	HEWLETT-PACKARD CO	33- 54	43 3/8	+3 1/8	+7.7
N	HONEYWELL INC	83-115	72 1/2	+2 1/2	+3.5
N	IBM	48- 73	62 3/4	+ 1/8	+0.1
O	MAGNUSON COMP SYSTS	4- 32	5	+ 3/4	+17.6
N	MANAGEMENT ASSIST	9- 26	10 3/8	+ 1/2	+5.0
O	MINI-COMPUTER SYST	1- 4	3/4	+ 1/4	+50.0
N	MODULAR COMPUTER SYS	7- 32	7 1/4	- 1/2	-8.4
N	MOHAWK DATA SCI	11- 32	13 7/8	+ 7/8	+6.7
N	NCR	38- 76	42 7/8	- 1/8	-0.2
N	PRIME COMPUTER INC	18- 49	24 1/4	+2	+8.9
N	PERKIN-ELMER	21- 36	26 5/8	+ 1/4	+0.8
N	SPERRY CORP	30- 65	32 3/8	+ 1/8	+0.3
O	TANDEM COMPUTERS INC	13- 35	27	+1 1/2	+5.8
N	TEXAS INSTRUMENTS	71-151	80 1/8	+1 1/4	+1.5
A	WANG LABS.	23- 46	30 5/8	+2 1/8	+7.4

LEASING COMPANIES

EXCH		1981-82 RANGE (1)	CLOSE FEB 3 1982	WEEK NET CHNGE	WEEK PCT CHNGE
O	BOOTHE FINANCIAL CP	18- 29	22 1/4	0	0.0
N	COMDISCO INC	18- 27	25 3/4	+1 5/8	+6.7
B	COMMERCE GROUP CORP	1- 2	1/2	- 1/8	-20.0
O	COMPUTER INVSTRS GRP	1- 4	1/4	0	0.0
O	CONTINENTAL INFO SYS	4- 9	8	0	0.0
N	DPF INC	5- 13	11 1/8	+ 1/2	+4.7
O	ITEL	1- 15	5/8	- 1/8	-16.8
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 30	23 3/8	+1 1/4	+5.6

SOFTWARE & EDP SERVICES

EXCH		1981-82 RANGE (1)	CLOSE FEB 3 1982	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	2- 8	2 1/2	+ 1/4	+11.1
O	ADVANCED SYSTEMS INC	10- 15	13 1/2	+ 1/2	+3.8
O	ANACOMP INC	10- 19	10 1/4	0	0.0
O	ANALYSTS INTL CORP	3- 14	7 1/2	0	0.0
A	APPLIED DATA RES.	13- 25	22 5/8	+1	+4.6
B	ASTRADYNE COMP IND	4- 5	4 1/8	- 1/8	-2.9
N	AUTOMATIC DATA PROC	22- 32	25 5/8	+2 3/8	+10.2
O	CGA COMPUTER ASSOC	4- 25	8	0	0.0
O	COMPUTER HORIZONS	1- 5	3 1/4	+ 1/4	+8.3
O	COMPUTER NETWORK	4- 9	4 7/8	+ 3/8	+8.3
N	COMPUTER SCIENCES	12- 30	14 1/4	0	0.0
O	COMPUTER TASK GROUP	10- 23	10 1/4	+ 1/4	+2.5
O	COMPUTER USAGE	2- 10	3 3/8	- 1/2	-12.9
O	COMSERV CORP	9- 18	13 3/4	+ 1/4	+1.8
O	COMSHARE	7- 21	7 1/4	+ 1/8	+1.7
O	CULLINANE DATABASE	15- 37	32 1/4	+2 1/4	+7.5
O	DATA DIMENSIONS INC	0- 4	3/8	- 1/16	-12.4
O	DATATAB	1- 4	1 3/4	+ 1/8	+7.6
O	DBI CORP	4- 8	4 7/8	+ 1/8	+2.6
O	DYATRON CORP	3- 11	3 3/8	0	0.0
N	ELECTRONIC DATA SYST	15- 30	22	- 7/8	-3.8
O	INFORMATICS INC	10- 23	17	+1 1/4	+7.9
O	INSYTE CORP	1- 3	2	0	0.0
O	IPS COMPUTER MARKET.	1- 4	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 8	4 1/4	0	0.0
A	LOGICON	22- 38	31 3/8	+ 1/8	+0.3
O	MNGT SCI AMER INC	17- 26	21 3/4	+ 1/4	+1.1
O	MATHEMATICA INC	12- 26	25 1/2	+2	+8.5
O	MATHEMATICAL APP GRP	15- 28	16	+ 9/2	+3.2
O	NATIONAL DATA CORP	14- 28	18 1/8	+1 1/2	+8.5
N	PLANNING RESEARCH	5- 13	7	+ 3/8	+5.6
O	PROGRAMMING & SYS	1- 2	1 1/8	0	0.0
O	REYNOLDS & REYNOLD	16- 26	18	- 1/4	-1.2
O	SEI CORP	17- 28	26	+3	+13.0
O	STSC INC	6- 28	7 1/4	+ 1/4	+3.5
O	SCIENTIFIC COMPUTERS	7- 16	7 3/4	0	0.0
O	SOFTWARE AG	8- 23	8 1/2	-3	-26.0
B	TYMSHARE INC	18- 58	18 3/4	- 1/2	-2.5
A	URS CORP	11- 18	12 7/8	+ 3/8	+3.0
N	WYLY CORP	7- 20	8 1/8	+ 1/8	+1.5

PERIPHERALS & SUBSYSTEMS

EXCH		1981-82 RANGE (1)	CLOSE FEB 3 1982	WEEK NET CHNGE	WEEK PCT CHNGE
N	AM INTERNATIONAL	4- 25	3 5/8	- 1/8	-3.3
A	ANDERSON JACOBSON	10- 28	11	- 1/4	-2.2
O	AUTO-TROL TECHNOLOGY	8- 62	12 3/4	+2 1/4	+21.4
O	BANCTEC INC	20- 35	32 1/4	+3 1/4	+11.2
O	BEEHIVE INT'L	6- 18	7 5/8	+ 3/4	+10.9
A	BOLT,BERANEK & NEW	8- 25	14 1/8	+3 3/8	+31.3
O	CAMBEX CORP	2- 8	2 7/8	- 1/8	-4.1
N	CENTRONICS DATA COMP	7- 40	12 5/8	+ 3/8	+3.0
A	CETEC CORP	4- 8	4 3/4	+ 1/8	+2.7
O	COMPUTER DEVICES INC	4- 10	7 5/8	+ 5/8	+8.9
O	COGNITRONICS	3- 11	3 1/8	0	0.0
B	COMPUTER COMMUN.	1- 8	7/8	+	+7.1
A	COMPUTER CONSOLES	18- 28	20 1/4	- 1/8	-0.6
O	COMPUTER TRANSCEIVER	3- 8	6 1/4	- 1/4	-3.8
N	COMPUTERVISION CORP	20- 48	32 5/8	+2 3/8	+7.8
N	CONRAC CORP	17- 28	23 1/4	- 3/4	-3.1
A	DATA ACCESS SYSTEMS	2- 23	3 3/8	- 1/4	-6.8
A	DATAPRODUCTS CORP	18- 44	18 5/8	- 1/4	-1.2
O	DATUM INC	2- 5	1 3/4	0	0.0
O	DAVID JAMISON CARLYL	3- 8	6 1/8	+ 5/8	+11.3
O	DECISION DATA COMPLT	3- 8	3 7/8	+ 3/8	+10.7
O	DELTA DATA SYSTEMS	2- 4	3 7/8	0	0.0
O	DATARAM CORP	4- 15	6 5/8	0	0.0
N	ELECTRONIC M & M	3- 9	3 1/2	+ 5/8	+21.7
O	EVANS & SUTHERLAND	18- 40	25 1/2	+ 1/4	+0.9
O	FABRI-TEK	2- 8	5 7/8	0	0.0
O	GENERAL COMPUTER SYS	1- 12	6 1/2	0	0.0
N	GEN'L DATA COMM IND	8- 18	8 1/2	0	0.0
O	GENERAL TERMINAL CP	8- 4	5/8	-	-8.2
N	HAZELTINE CORP	18- 35	28 3/4	+3 5/8	+13.8
O	INFORMATION INTL INC	8- 17	11 3/4	+ 3/4	+8.8
O	INTEL CORP	21- 51	25 1/4	-1 1/4	-4.7
O	IPL SYSTEMS INC	8- 13	7 1/2	+ 1/4	+3.4
A	LUNDY ELECTRONICS	7- 18	8 1/2	+1 1/8	+15.2
A	MEI DATA CORP	11- 27	16 3/4	+ 3/8	+2.2
O	NETWORK SYSTEMS CORP	14- 25	18 1/2	+1 1/2	+8.3
O	OMEX	2- 12	8	0	0.0
N	PARADYNE CORP	25- 52	41	+3 5/8	+8.8
A	PENRIL CORP	8- 17	8 3/8	0	0.0
O	RAMTEK CORP	8- 23	13 3/4	+ 3/4	+5.7
N	RECOGNITION EQUIP	5- 21	4 5/8	- 1/2	-8.7
O	SCAN DATA	1- 5	3/4	0	0.0
N	STORAGE TECHNOLOGY	18- 40	30 1/2	0	0.0
O	SYKES DATATRONICS	8- 34	28 1/2	+ 3/4	+2.8
A	T BAR INC	12- 19	15 3/8	+ 1/2	+3.3
A	TEC INC	4- 7	6 1/2	0	0.0
N	TEKTRONIX INC	48- 70	48 3/4	-1 5/8	-3.1
N	TELEX	5- 9	8	+1	+14.2
O	TESDATA SYSTEMS CP	6- 17	8 7/8	+ 1/4	+2.7
A	TIMEPLEX INC	6- 18	7 3/4	+ 1/8	+1.6
O	WILTEK INC	1- 3	2	+ 1/8	+8.6

SUPPLIES & ACCESSORIES

EXCH		1981-82 RANGE (1)	CLOSE FEB 3 1982	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN BUS PRODS	11- 17	12	+ 1/4	+2.1
O	BALTIMORE BUS FORMS	1- 2	1 1/4	+ 1/4	+25.0
N	BARRY WRIGHT	15- 24	18 3/4	+1 3/8	+8.8
O	CYBERMATICS INC	1- 2	1	0	0.0
A	DUPLEX PZODUCTS INC	12- 17	14	+ 3/8	+2.7
N	ENNIS BUS. FORMS	15- 23	18 3/8	- 1/4	-1.3
N	3M COMPANY	48- 65	55 1/2	+ 3/4	+1.3
O	MOORE CORP LTD	27- 38	31 1/8	- 1/8	-0.3
N	NASHUA CORP	16- 33	15 3/4	- 3/8	-2.3
O	STANDARD REGISTER	30- 41	33 1/2	- 1/4	-0.7
A	TAB PRODUCTS CO	15- 30	17 1/4	+1 3/8	+8.8
N	WALLACE BUS FORMS	22- 38	33	+2 5/8	+8.6

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH; B=BOSTON
L=NATIONAL; M=MIDWEST; O=OVER-THe-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Installing an IBM 4321 or 4331?

Ask your IBM salesman about SSX. Ask your MSA salesman about System 43.™

The only interactive family of business software for IBM's SSX System.

Now there's a complete family of business application systems for your IBM 4321 or 4331 computer that gives you the power of mainframe software without programmers.

It's System 43™ from MSA. The first application software designed especially for IBM's new SSX (Small System Executive) operating system for the 4321 or 4331.

Improves productivity dramatically

How? Simple. With MSA's System 43, you get a system that's designed from the ground up to be used by your financial and accounting people without programmer assistance.

You don't need a highly qualified system operator. And even installation can be handled by anyone with a minimum of data processing experience.

Important breakthrough

IBM's new SSX operating system is the most important development in user-friendly system software ever. And with System 43, you can make the most of it.

To bring you System 43, MSA began with extensive pre-release field testing as a beta site for SSX.

Then we developed special versions of our own line of user-friendly business application software.

And with more than 6800 of our systems installed around the world, MSA software is user-proven and highly refined.

Put it all together and you've got System 43. You can only get it from MSA.

The only business application system you'll need

You get a complete menu of business application software designed specifically to operate with SSX.

System 43 eliminates the problems you face in evaluating and purchasing systems from different suppliers.

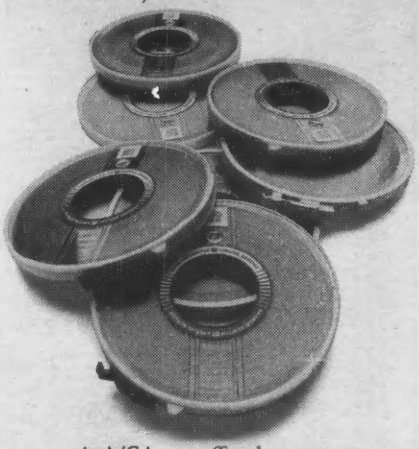
You don't have to worry about incompatibility between mismatched software systems. The application components available with System 43 function together to give you the information you need in a smooth, problem-free operating environment.

Documentation is concise and easy-to-understand because it's written in plain-English that won't confuse non-data processing personnel.

And with MSA's worldwide customer service team to support your systems, software maintenance is greatly simplified.

Talk to the software experts

Divisions of more than half of the Fortune 500 companies use MSA software systems, in addition to several thousand other organizations, many with their first computers.



At MSA, we offer the most comprehensive line of business application packages currently available from one source.

So you get a wider choice of application packages. And MSA Industry Specialists can show you how these systems will fit your company's software requirements.

These application components include all the same interfaces and online capabilities that come with other MSA systems.

MSA System 43™ Components
1. General Ledger
2. Accounts Payable System
3. Accounts Receivable
4. Encumbrance Accounting
5. Fixed Assets Accounting
6. Inventory and Purchasing System
7. Forecasting and Modeling
8. Personnel Management & Reporting
9. Payroll Accounting

You get more than software

When you choose System 43 software, you also get the software company. At MSA, we know it takes a lot more than a great software package to give our customers the kind of service they need.

That's why we provide on-going customer support that includes thorough documentation, periodic system enhancements, and continuous educational programs for your people.

Find out more

We'd like to tell you more about System 43 and other MSA systems.

For more information please contact Robert Carpenter, (404) 262-2376. Or just clip the coupon below.

MSA The Software Company

Management Science America, Inc.
3445 Peachtree Road, N.E., Atlanta, Georgia 30326

☐ Please send me more information on System 43™ and other MSA systems.
☐ Currently have IBM 4331. ☐ Planning to acquire IBM 4331.
☐ Planning to acquire IBM 4321.

NAME_____
TITLE_____
COMPANY_____
ADDRESS_____
CITY_____
STATE_____ ZIP_____
BUSINESS PHONE ( )_____

CW7as2(2/8/82)